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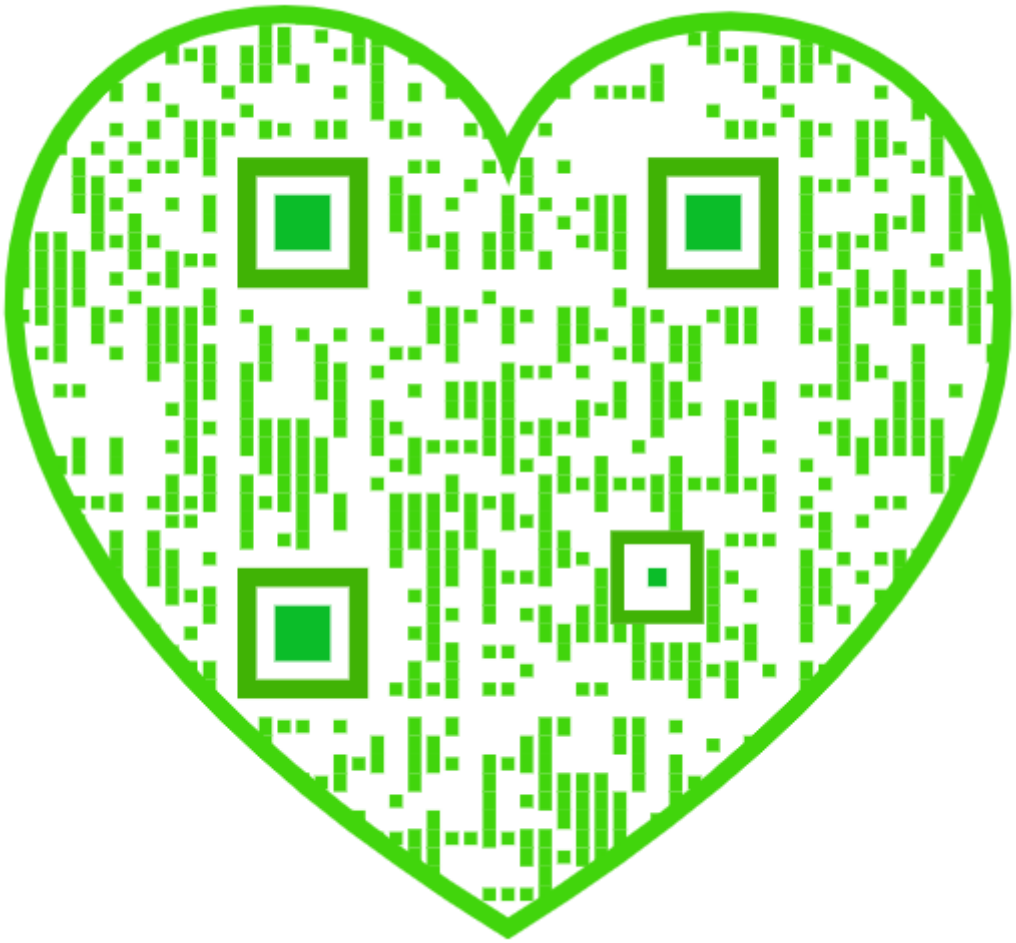

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SYMPTOMATOLOGY, PSYCHOGNOSIS, AND DIAGNOSIS OF PSYCHOPATHIC DISEASES

WORKS BY BORIS SIDIS

The Foundations of Normal and Abnormal Psychology

The Psychology of Suggestion

Multiple Personality

Psychopathological Researches

An Experimental Study of Sleep

Philistine and Genius

The Psychology of Laughter

Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases

The Causation and Treatment of Psychopathic Diseases

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INTRODUCTION

We are getting more and more awake to the importance of the study of the phenomena of abnormal mental life. The student of normal psychology begins to realize the necessity of a knowledge of the various manifestations of the abnormal mind, both conscious and subconscious. The phenomena that lie on the borderland of what is regarded as normal mental activity are of great interest and importance, because, being deviations or variations from the normal and the familiar, they are apt to call attention to the mechanism, causation, and laws that govern mental activity in general, normal and abnormal, conscious and subconscious.

The normal psychologist has learned to pay attention to the facts of abnormal mental life, since a knowledge of them sheds a good deal of light on the various manifestations with which he himself deals, manifestations which have resisted psychological analysis, such as emotion, will, personality, and even such apparently simple mental functions as associative processes and perception. Not that the normal psychologist has not made important contributions to the understanding of all those processes, but many of the studies touched the surface, and did not penetrate deep into the subsoil of mental life, into the subconscious activity where all the sources of mental life have their being, where mental processes have their origin, and whence all mental processes come to light in the focus of consciousness.

The phenomena of memory are of vital importance

in normal psychology, and while a good deal of work has been accomplished by the normal psychologist in this subject, and some far reaching laws, such as those of Ebbinghaus, have been formulated, still we are far from a real understanding of this fundamental function. In this respect abnormal psychology is of material help, on account of the great number of variations which that function presents to the psychopathologist. In fact, most of the studies of recent psychopathology may be regarded as researches in the domain of memory. From a certain standpoint psychopathic maladies may be regarded as affections of memory. Studies in abnormal psychology are thus of vital interest to the investigator in normal psychology. A study of the anaesthesias, abulias, amnesias is of consequence to a right understanding of memory and volitional activities; the phenomena of dissociation of personality or of multiple personality give an insight into the labyrinth of human personality, while dreams, illusions and hallucinations give a broad view and clear understanding of the various elements of perceptual processes.

If, however, abnormal psychology is of importance to the normal psychologist from a purely theoretical standpoint, it is certainly of the utmost consequence to the medical profession. A clinical knowledge of the facts of abnormal mental life should be in the curriculum of every medical student. Every medical practitioner should be more or less familiar with the symptoms of psychopathic diseases.

We must not forget that mind and body are intimately related. The two cannot be separated. One reacts on the other. Physical disturbances bring about mental aberrations which in their turn influence physical

of insanity there are thousands of cases of functional neurosis and psychopathic affections which have absolutely nothing to do with insanity, affections which the psychiatrist, from the very nature of his training, is neither in a condition to grasp nor able to deal with.

The medical profession must realize the importance of a working knowledge of subconscious mental affections. More than one-half of the patients that come to the general practitioner are cases of psychopathic disorders. An early recognition and appropriate treatment would not only vindicate the professional man, but would help the patient at the right moment and prevent him from becoming a chronic invalid.

I must say that many medical men, regarding themselves as belonging to the conservative type, show a good deal of opposition to abnormal psychology. Thus some medical men accused me of carrying on work in spiritualism. Others with medical authority lecture on "the limitations of Psychotherapy". Vulgar Psychotherapy is all they know of the vast domain of psychopathology. It is but six years or so since a well known medical journal rejected, without as much as a comment, my clinical "Studies in Psychopathology," afterwards published in "The Boston Medical and Surgical Journal." I have not the least doubt that my present volume will meet with no less opposition from similar quarters, and especially with attacks by "psychologizing" neurologists and psychiatrists taking refuge under Freud's paternal wings.

I sincerely hope that in the course of time the more liberal, the more open minded and progressive men of the medical profession will be more appreciative of the work done in normal and abnormal psychology. The

younger generation of medical men, I trust, will realize the importance of a working knowledge, both theoretical and clinical, of psychopathic mental diseases.

I may say that a knowledge of psychopathic troubles is of more material help to the practitioner than all his studies in experimental physiology, for instance, with its muscle-nerve preparations, more important than the bacteriological technique with its examinations of bacteria and bacilli, toxins and autotoxins, with the endless sera, often of a highly doubtful character, much advertised by commercial houses. Perhaps it may be well to remind the medical man that a good deal of what is taught in the medical schools as materia medica, or pharmacology, theory and practice, should be really regarded as courses in suggestive therapeutics, given under the guise of medicine, of virtues and properties of drugs so that the physician should have faith in them himself when he treats his patients.

The Nemesis of faith in the so called scholastic medical therapeutics with its lack of psychological knowledge is fast overtaking the medical man. The Freudian school with its symbolical, cabalistic, occult notions and sexual sensationalism, rivalling that of the yellow press, has become the favorite in certain medical quarters. Physicians innocent of all psychological knowledge publish voluminous pseudoanalytic papers under the impression that they furnish the last word in medical psychology. The sight of some medical dignitaries taking a regular bath in sexual filth, possibly as a matter of redemption and expiation, would be ludicrous, if it were not so pathetic.

It is amusing to read puerile compositions, each a mile long, going into detailed description of sexual experi-

ences with a zeal worthy of a better cause. The Freudians select choice cases of sexual perversion and degeneracy, much of which is of a purely suggestive character, and describe them with a gusto that *well displays their own subconscious trend.* According to Freudian 'pseudoanalytic science' the world is a madhouse of sexual perversion and inversion. The Freudian gloats over his sexual experiences. In order to accomplish this remarkable result a whole mass of tokens, signs and symbols is formulated and organized into a systematized, paranoidal 'complex.' This Freudian verbigeration and rumination some medical authorities and their followers hail as the Gospel of medical psychology, a new up to date German importation, known under the high sounding name of psychoanalysis. Psychoanalysis is a form of medical bacchanalia. Is it not the Nemesis of psychology,—that mad medical dance of psychoanalytic worshippers round the shrine of Venus and the altar of Priapus?

It would have been amusing, if it had not been fatal to the mental and moral balance of the patients, to hear some medical authorities advising their patients to take a 'course in psychoanalysis.' If those neurological practitioners should understand what a course of treatment in psychoanalysis really means to a nervous person, they might as well advise him to commit moral suicide, or to take a course in sexual profligacy.

I have seen many a patient who has become a sexual ruin long before the psychoanalyst got through with his sexual courses. I have known many a patient who under the highly suggestive, psychoanalytic treatment has begun to masturbate daily and has become a sexual per-

vert.

Psychoanalysis is a conscious and more often a subconscious or unconscious debauching of the patient. Nothing is so diabolically calculated to suggest sexual perversion as psychoanalysis. Psychoanalysis paraded as psychological investigation is not only a danger to the patient, but it is a menace to the community. And yet this form of mental debauch commends itself to some medical authorities as a great discovery in the domain of abnormal psychology! Better Christian Science than psychoanalysis!

There is at present a current in psychopathology that ascribes a good deal of importance to desire, to purpose, to meaning. This current is essentially Freudian in character. The representatives of this tendency are not satisfied unless they read some meaning, conscious or unconscious, into the various phenomena of abnormal mental life. They try to find in the abnormal symptoms of psychopathic patients some mysterious significance which they attempt to reveal by special interpretation. They try to find some hidden meaning in phenomena regarded as symbolic of unconscious trends which they decipher by a special code of procedures, signs and tokens. They are somewhat like the ancient augurs who could read the future from the flight of birds and the guts of animals. Others, carried away by the same influence, but rather more cautious in their speculations, attempt to find special meanings in each and every symptom of psychopathic cases, and are not satisfied until some meaning, however obscure and laborious, is forced out of the facts under their examination.

Now in all my work, carried on for years and pub-

lished in various works and papers, I lay special stress on the fact that the *phenomena of abnormal mental life do not present any purpose in the present; they are repetitions, recurrences of a past, but they have no aim, no purpose, no meaning in the present life existence of the patient. In fact, the symptoms are pathological, just because they have no purpose, no meaning in the life of the patient.*

The most superficial and puerile method is that of tracing subconscious meanings in lapses of words, in amnesias, by means of association methods. The physician gives a series of words and the patient is supposed to answer with some words which are scanned by the physician as to time and quality. All kinds of symbolical and diabolical combinations are then formed by the physician who thinks he is doing great psychoanalytic work. All he does is ingenious, cabalistic casuistry worthy of mediaeval scholasticism.

When Freud's *Psychopathologie des Alltagslebens* was published I discussed the examples, so ingeniously worked out by Freud, with the late Professor James of Harvard. James laughed at the puerility of Freudian associations; he threw up his hands at the psychoanalytic absurdities, and characterized Freudian *Psychopathologie* as 'silly and nonsensical.' Some similar opinion is maintained by Wundt, Ziehen, Oppenheim, Aschaffenburg and others. Not a single psychologist or psychopathologist of note accepts Freud's sexual phantasies and Oneiromancy.

The association method used by the Freudian school, in order to discover the hidden meaning that lies in the subconscious or the unconscious, is arbitrary. The followers of Freud are inexperienced in the actual investi-

gations of subconscious phenomena in which suggestibility plays such an important rôle. There is not a single case of the Freudian school that is free from artefacts of subconscious suggestion, played between patient and physician, in which the Freudian is the biggest dupe. In fact, the very methods of free association and oneiromantic interpretations are of such a character that any associations may be formed, according to the wish of the physician.

The Freudian himself is possibly the best illustration of his own theory that one may be duped by his own wishes. In this respect the Freudian does live up to his theory that everything can be explained by wish and its ideal fulfillment. As I put it in another place 'if wishes were horses beggars would ride,'—the Freudian rides such horses.

On the whole, teleological psychology is questionable. One can find any number of purposes in mental symptoms and associations; speculations in that direction are often as idle as they are useless. When Harvey discovered the circulation of blood, the objection was the teleology of it, what is its purpose, what is its meaning. Harvey had to defend his theory against objections that claimed that he did not go deep enough into the subject, as he did not give the meaning of the circulation of blood, and, therefore, his discovery could not be true. "To those who repudiate the circulation" Harvey writes "because they neither see the efficient nor the final cause of it, and who exclaim *cui bono?* I have yet to reply, having hitherto taken no note of the objection which they take up."

Teleology is a tradition handed down through the scholastic Middle Ages from Plato and Aristotle,

and often comes to life in sciences that have not reached their state of maturity. Not that I deny the purposive element in mental life, but I do claim that its sphere even in normal life is extremely limited, and that it is almost completely absent in states of morbid psychic affections. Freudism is a good example of it.

Morbid mental states have no meaning. In a certain sense we may even say that *mental states are morbid, just because they have no meaning.* The cure often consists in the fact of either having such states completely eliminated from the stream of mental activity, or in *finding for them a meaning which originally they do not possess.*

Clinical psychopathology should not burden itself with all kinds of speculations and hypotheses, but stick to facts. Teleology or the finding of meanings, infantile and others, the discovering of hidden purposes and unconscious meaning, because of the metaphysical dogma that the unconscious can only wish and form desires which the symptom complex of the malady expresses as the meaning of the hidden conation, is to bind oneself with arbitrary speculative theories and metaphysical hypotheses. The most consistent of those speculators are unconscious followers of Schopenhauer who puts the Unconscious Will at the basis of his metaphysics. Will is at the heart of things, hence there is a craving in the Unconscious which is the very essence of the phenomenal manifestations of the Will.

According to Schopenhauer the phenomenal world is the manifestation of the Will, of the Kantian *Ding an sich,* of the noumenon which is beyond time, space, and causality. The Unconscious in nature is the Will

which works and manifests itself in it. The world is the objectification of the Will. "The Will is the thing in itself, the content of all phenomena. . . . The phenomena are throughout necessary. . . . This follows from the unrestricted validity of the principle of sufficient reason. . . . In another aspect, however, the same world is for us, in all its phenomena, objectivity of will . . ." This metaphysical doctrine of Will is at the basis of Freudian "pseudoanalysis."

The doctrine of will, desire and suppression, resistance and *Abwehr* is a close copy of Schopenhauerian metaphysics: "In the *resistance of the will*" says Schopenhauer "to allowing what is contrary to it to come under the examination of the intellect lies the place at which madness can break in upon the mind. Each new adverse event must be assimilated by the intellect (the conscious, or *das Bewusste*), it must receive a place in the system connected with our will and interests whatever it may have to displace that is more satisfactory. Whenever this has taken place, it already pains us much less; but this operation itself is often very painful, and also in general, only takes place slowly and with *resistance.*

"However, the health of the mind can only continue so long as this is in each case properly carried out. If, on the contrary in some particular case, *the resistance* and struggles of the will against the apprehension of some knowledge reaches such a degree that that operation is not performed in its integrity, then certain events or circumstances become for the intellect (*für das Bewusste aber nicht für das Unbewusste* as the Freudian would say) completely suppressed, because the Will cannot endure the sight of them, and then, for the sake of

the necessary connection, the gaps that thus arise are filled up at pleasure (by the activity of the unconscious); thus madness appears. For the intellect has given up its nature to appease the Will: the man now imagines what does not exist." And here comes another fundamental Freudian metaphysical tenet: "*Yet the madness which has thus arisen is now the lethe of unendurable suffering; it was the last remedy of harassed nature, i. e., of the Will.*" Freudianism is Schopenhauerian metaphysics gone mad. *Psychoanalysis is truly perverted 'madical' metaphysics.*

In psychopathic cases the symptom complex of the functioning systems, characteristic of the pathological condition, has essentially no meaning in the present, although the patient especially with the help of the physician may find some meaning as do the insane when trying to account for their pathological state. *The psychopathic symptoms are survivals, relics from a previous epoch of the life existence of the patient.* The psychopathic symptom complex is a survival from a stage of experience the meaning of which is gone, and is therefore entirely *irrational.*

It is only when we come to realize the irrationality and lack of adaptation, inner and outer, of such pathological, meaningless systems, conscious and subconscious, that we begin to understand the psychopathic character of the symptom complex.

In this respect psychopathic systems are analogous to the irrational customs and myths found in various stages of human culture. This point is specially misapprehended and misapplied by the Freudians. As long as one attempts to force on myths a meaning, philological or sexual, one is sure to go astray and to be lost in a maze of

verbiage and sophistry. Myths are survivals of savage thought, now meaningless and irrational. The Freudians clearly reveal their absurdity by the allegorical subtleties of their mythical, sexual psychology in which their sexual fancy runs riot.

Myths are relics of savage thought, *recurrent* manifestations of savage experience, surviving phases of savage *Weltanschauung*. All the Freudian 'psychologizing' about myths is nothing but idle pseudoanalytic fancy without the least foundation in fact. To the problem—why irrational ideas survive in myths—Andrew Lang pertinently says: "We may be asked why do savages entertain irrational ideas which survive in myths? One might as well ask why they eat each other, or use stones instead of metals. Their intellectual powers are not fully developed, and hasty analogy from our own unreasoned consciousness is their chief guide. Myth, in Mr. Darwin's phrase, is one of the "miserable and indirect consequences of our higher faculties." All the casuistry of Freudian mythology is arbitrary and sophistical. The Freudians use scholastic casuistry for the rationalization of what is essentially irrational. "It" (the myth) says Lang, "is a jungle of foolish fancies, a *Walpurgis Nacht* of gods and beasts and men and stars and ghosts, all moving madly on a level of common personality and animism, and all changing shape at random, as partners are changed in some fantastic witches' revel" . . . "The imagination of the savage has been defined as 'midway between the conditions of a healthy, prosaic, modern citizen and of a raving maniac or of a patient in a fever ward.' "

Just as the irrational elements of myths are the survivals from a savage state of mind which has no mean-

ing in the present life of civilized communities so we may say that mental, subconscious, psychopathic symptom-complexes are survivals of a former period of mental activity; they are atavistic systems which keep on recurring, like the type of recurring moment consciousness, under appropriate circumstances and favorable conditions, but which are now irrational, without meaning and purpose.

The Freudians have invented a psychopathic Oedipus complex of which they make much capital. They show however by it a sad lack of psychological understanding and a deficiency of scientific insight as well as absence of common sense. Neither is their analysis of the Oedipus myth in any way correct nor is their interpretation of clinical facts in the least approaching the truth. The whole of psychoanalysis is nothing but puerile, Talmudic hair splitting sophistry.

The Oedipus complex which is kept in so much reverence by the Freudian devotee is scientifically and clinically false. The Oedipus myth is wrongly interpreted by the Freudian sexual mythology and has absolutely nothing to do with the actual condition of psychopathic cases. All there is to the Oedipus "complex" is a matter of ordinary suggestibility to which psychopathic patients readily lend themselves and of which the psychoanalyst is the principal dupe.

Max Müller regards the Oedipus story as a solar myth. It is, however, quite probable, as J. G. Frazer points out, that there is in the myth a survival from the early savage period of matriarchate or mother-kin when the right to the throne was in the female line. The father exposed and slaughtered the son, and the son in his turn de-

throned the father by force and murder. The savage chiefs and kings sacrificed and killed their male children, especially their first born sons, while the surviving sons assassinated their fathers. The myth is a reminiscence, a relic handed down from savage times of the struggle for existence, going on within savage communities for the tenure of kingship. The marriage with the king's widow was requisite in order to obtain the right to the throne. The father murdered the son, and the son, when he was rescued, had to assassinate the father. It was a matter of killing or being killed. What we find in the myth is another example of the working of the instinct of individual and more specially of social or tribal self preservation.

Father, son, and members of the royal family were sacrificed as an atonement for tribal sins, they were immolated and slain as an expiation for the transgressions of the community, and hence their deaths were supposed to ensure the prosperity of society. The Oedipus myth with its deaths of Laios, of Oedipus, of Jokaste and of the children of the royal house for several generations is a relic of savage practice in the struggle for self-preservation.

This is well brought out in the Greek myth of Athamas, current in Alus, a town in Thessaly. King Athamas and his family had to furnish victims as sin-offerings for the whole country and thus ensure its welfare. The wife and children suffered exile and death in various ways and king Athamas himself was ordered by the oracle to be sacrificed for the good of the community. The unhappy king was saved by his grandson, Cytisorus. Athamas became insane, quitted his country and went wandering in the wilderness. Here we have

a modification of the Oedipus myth, a modification which shows the real nature of such stories, namely that they are relics, survivals, or recurrences of savage practices in the struggle of tribal self-preservation. The Freudian sophistic interpretation of their 'Oedipus complex' is as shallow as it is arbitrary,—it is pseudoanalytic rubbish, sexual trash without any rhyme and reason.

Distasteful as it is for me to do it, I find it my duty to enter a protest against the vagaries and absurdities of psychoanalysis which is nothing but a pseudo-science, the same as astrology, oneiromancy, palmistry and magic. On account of the sensational noise made by the devotees of psychoanalysis, the medical practitioner confuses psychoanalysis with scientific and clinical psychopathology. In condemning psychoanalysis many a clinical man of sound good sense also unjustly condemns all clinical, psychopathological research. The following statement is an extract from a letter written to me by an eminent medical man who stands at the head of the medical profession of this country:

"I think that the majority of men in general work do not separate psychopathology from psychoanalysis. Freud's theories and the whole trend of psychoanalysis have been so turned into the channels of distorted and perverted sexual life that it has blinded people to the fact that there are many dominant phases in mental life which are not sexual. The ordinary healthy minded and vigorous practitioner sees a lot of motives in life that are not sexual, and where everything is turned and twisted to one side, one 'complex,' he becomes indignant and disgusted, and condemns the whole broad subject of psychopathology."

My clinical work as well as my experimental investi-

gations and observations prove to me conclusively that not all mental processes are purposive or meaningful. Mental life activities are a matter of habit, often silly, and meaningless, even hurtful or pathological. Quite frequently the activity is carried out reflexly in response to external stimulations often detrimental to the life existence of the individual. Most of the actions which have no selective value may be completely indifferent.

This lack of purpose and absence of meaning in normal life may be regarded as being even more emphatic in pathological cases. It is only paranoiacs or paranoidal cases that may put a *quasi*-meaning on their abnormal experiences, but this meaning is entirely delusional. Of the same paranoidal type may be regarded the kind of meaning put on the symptoms of psychopathic cases. Psychoanalysis is a matter of suggestion played between the physician and the patient. Both are deluded. *Psychoanalysis is sheer humbug.*

We may lay it down as a law that *psychopathic life lacks meaning.* I lay special stress on this principle,—*lack of meaning characteristic of psychopathic affections.* This absence of meaning is the key to a right comprehension of the facts of psychopathology and of the methods of psychotherapy.

Perhaps it may be fitting here to say a few words about Psychognosis. Psychognosis is not a special method. All I wish to convey by it is what the term means, namely a study, an acquisition of a working knowledge of the patient's soul, so to say. The best way is to study the case by all kinds of methods, hypnoidal, hypnotic, and especially by a close observation of the waking states. The best way is not to rely on cut and

dried methods, such as pedantic laboratory tests, which are clumsy, awkward, and highly misleading.

It is best to live with the patient, to watch him closely when he acts spontaneously, converse with him, discuss with him, work with him, be with the patient day and night, and labor with him for hours, as well as live with him intimately for weeks and months. It is only under such conditions that we come to realize the actual condition of the patient and can obtain a glimpse of the workings of his mind. No cut and dried tests, reaction time or association time or tests with association words, and then leading the patient along lines suggested unconsciously by the physician, or any attempt at putting the case into some pigeon hole of a classification, common with the neurologist and psychiatrist, such as dementia praecox, psychasthenia and so forth, can lead to any understanding of the case.

The best way is to study the case, know it by the description of its symptoms, and dig deeply into the conscious and subconscious sides of the patient's character and life history. In short, we must learn to know the workings of the patient's mind, we must learn his ideals of life, his attitude towards man and to the world, his actions and his total reactions in his adaptations to his environment. In other words, we must learn to understand not only the patient's physical, nervous, and mental condition, not only his history and the development of his present trouble, but we must learn his personality as a whole, his attitude to his external surroundings, his *Weltanschauung* so to say.

This can only be accomplished by all methods at our disposal, by hypnoidal and hypnotic states, by examina-

tion in the waking state, by constant watching and observation, by drawing out the patient in discussion, and by closely observing him in his actions and behaviour in regard to his family, his friends and strangers for a long period of time. The knowledge thus obtained of the patient's psychic life is what I regard as *Psychognosis*. Such a knowledge is indispensable for a right comprehension of the patient's condition, and is still more important, if we wish to cure him. In other words, psychognosis is of importance not only from a theoretical, psychopathological standpoint, but is of the utmost consequence to a right, practical, psychotherapeutic procedure and treatment.

I may add that some of the chapters included in this volume have been published by me in the form of articles in various medical and psychological journals.

BORIS SIDIS.

Sidis Psychotherapeutic Institute,
Portsmouth, New Hampshire,
July, 1914.

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PART I

SUBCONSCIOUS STATES

BORDERLAND PHENOMENA

Symptomatology, Psychognosis, and Diagnosis of Psychopathic Diseases

CHAPTER I

THE SUBCONSCIOUS AND THE CONDITIONS OF ITS MANIFESTATION

BEFORE we can study the manifestations of psychopathic diseases it is well to review the subconscious, its conditions and its principal states.

The nervous centres of man's nervous system, if classified as to function, may be divided into inferior and superior. The inferior centres are characterized by reflex and automatic activity. A stimulus excites the peripheral nerve-endings of some sense-organ; at once a nerve current is set up in the afferent nerves. This current in its turn stimulates a plexus of central ganglia, the nervous energy of which is set free and propagated along the efferent nerves towards muscles and glands; secretions, muscular contractions or relaxations are the result.

Ingoing and outgoing nervous currents may be modified by the nervous centres; nervous currents may be intensified, decreased in energy or even entirely inhibited by mutual interaction. Such a modification takes place according to the law formulated by Ziehen: "If an excitation of a definite intensity (m) take place in

one cortical element (*b*), and another excitation of a different intensity (*n*) take place at the same time in another cortical element (*c*) which is connected by a path of conduction with (*b*), the two intensities of excitation may reciprocally modify each other."

Although such modifications may frequently occur, it nevertheless remains true that the inferior centres are of a reflex nature. No sooner is the nervous energy of a lower centre set free than at once it tends to discharge itself into action. The physiological process of setting free the nervous energy in a central ganglion, or in a system of central ganglia, is accompanied in the simpler, but more organized, more integrated centres by sentience, sensibility, and in the more complex, but less integrated, less organized centres by consciousness, sensations, perceptions, images, ideas, and emotions.

Turning now to the superior or the highest nervous centres, we find that they are characterized by the function of choice and will. A number of impressions, of sensations, of ideas reach those higher "will" centres, and a critical, a sifting, a selecting, an inhibitory process at once begins. Some of the mental states are permitted to develop and to work themselves out within certain limits, others are given full play, while others and possibly the majority of them are rejected and inhibited. Psychologically this process expresses itself in the *fiat* or in the *neget,* in the "I will", or the "I will not." Every one is well acquainted with the will-effort, especially when having to make some important decision. These superior "choice and will" centres, localized by Ferrier, Wundt, Bianchi and others in the frontal lobes, and by others in the upper layers of the cortex, on account of their selective and

inhibitory function, may be characterized as inhibitory centres *par excellence.*

Parallel to the double system of nervous centres, the inferior and the superior, we also have a double consciousness, the inferior, the organic, the reflex consciousness, *the subconsciousness,* and the superior, the controlling, the choosing, the critical, the will-consciousness. The controlling consciousness may be characterized as the *guardian consciousness of the species and of the individual.*

From an evolutionary, teleological standpoint we can well realize the use of this guardian consciousness. The external world bombards the living organism with innumerable stimuli; from all sides thousands of impressions come crowding upon the senses of the individual. Each impression has a glandular affection, a motor reaction which if not counteracted may end in some possibly harmful or fatal result. It is not of advantage to the organism to react on all impressions, coming from external stimuli; hence that organism will succeed and survive in the struggle for existence that possesses some critical, selective, inhibitory "choice and will" centres.

The "choice and will centres" permit only a certain number of impressions to take effect, the rest are inhibited, only those impressions that are advantageous to the life existence of the individual are allowed to take their course; the others are nipped in their bud. The guardian-consciousness wards off as far as it is able all the harmful blows which the stimuli of the environment incessantly direct against the life of the individual.

In the normal condition of man the superior and inferior centres work in perfect harmony; the upper and lower centres and their concomitant forms of

consciousness are a unity, forming one conscious, active personality. Under certain conditions the two systems of nerve-centres may become dissociated. The superior centres, with their critical, controlling consciousness may become inhibited, or cut off, split off from the rest of the nervous system with its reflex consciousness which is thus laid bare, open to the influence of external stimuli or suggestions. The *inferior reflex consciousness constitutes the subconscious.* The subconscious is the highway of suggestibility. The subconscious is manifested or laid bare by *inhibition of the inhibitory centres,* or in other words, by a disaggregation of the superior from the inferior centres, followed by an increase of ideo-sensory, ideo-motor, and sensory-secretory reflex excitability. Psychologically regarded, inhibition of the controlling, waking consciousness results in the uncovering of the reflex consciousness, the revelation of the subconscious.*

To get at subconscious states definite conditions must be strictly observed, no matter what the method of procedure is.

The first and general condition of experimentation on the subconscious is *fixation of attention.* I ask the patient or subject to look at some particular point chosen by me, the time of fixation usually varying from two to five seconds. Fixation of attention is an important condition of access to the subconscious.

The next condition is *distraction of attention.* The

*By the subconscious is meant all processes of intelligence which are subjectively known as conscious, but which under special conditions fall outside the range of awareness, or of the knowledge of the individual. The subconscious is essentially a consciousness, a consciousness other than the personal consciousness. See *"The Psychology of Suggestion," "Multiple Personality," "The Foundations of Normal and Abnormal Psychology,"* and Appendix *IV.*

subject or patient has for a brief time, varying from a few minutes to hours, to fix his attention on some irrelevant point, spot, thing that has no connection with the material of the experiments or with the matter under investigation.

In all my experiments on the subconscious I have always had to guard against *variety of impressions.* Slight noises, coming from the adjoining rooms of the laboratory, are distinctly unfavorable to the experiments. There must be *monotony.* The subjects have to be accustomed to the conditions and objects in the room. A new impression, however slight, always proves a disturbance.

Limitation of voluntary movements is another important condition. While fixing their attention the patients or subjects have to keep as quiet as possible; otherwise they are disturbed, the attention begins to wander, and the work has to be abandoned for the time being. The subjects should be asked to make themselves as comfortable as possible, so they should not have to change their position during the investigation, and have their limbs relaxed. The condition of limitation of voluntary movements must be strictly observed.

Limitation of the field of consciousness may also be considered as one of the important conditions of investigation of the subconscious. This condition is in fact a result of the former ones, namely, fixation of the attention, monotony, and limitation of voluntary movements. For when these last conditions are present, the field of consciousness becomes contracted and limited to a few sensations and ideas. Contraction of the field of consciousness may, however, be effected where the other conditions are absent. A sudden, violent

impression may instantly effect an enormous shrinkage of the field of consciousness, and then the other conditions will naturally follow, or rather coexist. Consciousness will reverberate with this one violent sense impression and will thus attend to the latter only. There will also be monotony; since a sudden violent sense impression tolerates few neighbors, and drives out fresh incomers. Voluntary movements become limited, the body becomes paralyzed and relaxed.

Work on the subconscious can not be successfully carried on without the condition of *inhibition.* I ask the subject when he concentrates his attention and fixes it on a dot or object that he should try, as much as it is in his power, to banish all ideas, images which have no connection with the object in the focus of consciousness, that he should make his mind a perfect blank, and *inhibit* ideas, associations which may arise before his mind's eye and claim attention. This condition, of course, is rather a hard task for the subject or patient to comply with, still it is observed as far as it is possible.

The very last, but not the least condition, in the experiments is *immediate execution.* The subject has to perform the act required by the nature of the experiment as soon as he perceives the signal.

We may now make a synopsis of the conditions necessary for reaching the subconscious strata of the mind in the normal waking state:

(1) Fixation of the attention.
(2) Distraction of the attention.
(3) Monotony.
(4) Limitation of voluntary movements.
(5) Contraction of the field of consciousness.

(6) Inhibition.
(7) Immediate execution.

The conditions of distraction of attention and immediate execution are requisite for suggestibility in the fully waking states. The induction of more or less stable subconscious states is brought about under persistent action of five factors:

(1) Fixation of attention.
(2) Monotony.
(3) Limitation of voluntary movements.
(4) Contraction of the field of consciousness.
(5) Inhibition.*

It should be clearly understood that the factor of limitation of voluntary movements means essentially *bodily relaxation.*

The study of subconscious states is of recent origin, but it is now daily growing in importance. The mechanism of the human mind, the more elementary psychic processes are not directly given to the immediate introspective knowledge of self-consciousness, the results alone are given. It is the subconsciousness that one must look to in order to grasp the full meaning of the workings of the mind.

In experimenting on the subconscious in the normal waking state we may use two methods:

(I) The method of conscious impressions.
(II) The method of subconscious impressions.

(I) By the method of conscious impression we endeavor to reach the subconscious through the medium of impressions of which the subject is fully conscious. This method may in its turn be subdivided into:

(a) The method of indeterminate action.

*These conditions will be described in greater detail further on.

(b) The method of determinate action.

(a) When working with the method of indeterminate action we allow the subject, within certain limits, of course, to do or write anything that enters into his mind at the moment the experimentation is over. In studying, for instance, the suggestibility of the subconscious we may direct our efforts to find out, say, the suggestiveness of different conditions such as the influence of the earliest or latest impressions of certain stimuli, or the effect of a series of successive frequent or coexistent stimuli.

(b) The method of determinate action, or that of choice. When working with this method we limit the subject to a definite number of actions. Thus in studying the suggestibility of the normal individual, we may seek to determine the influence of the factor of strange, unfamiliar things and actions or that of abnormal position and so on.

(II) The method of subconscious impressions consists in arranging the experiments so as to influence the subconscious, but in such a way that the subject should not be conscious of the impressions. This method may be divided into:

(a) The method of choice distraction.

(b) The method of guesses or of subconscious impressions.

(a) By means of the method of choice we distract the patient's attention engaging it in some other direction, meanwhile influencing the subconscious in the determination of the subject's choice. The mechanism of these experiments may be arranged somewhat like the following:

A series of complicated patterns is made on slips of

paper, each slip having a different pattern. The subject has to look at the drawing of the pattern for about ten seconds. The slip is then withdrawn and he has to reproduce the drawing from memory—an extremely difficult task. In my experiments on the subconscious it took the subject about fifteen seconds and more before he could make anything bearing the slightest resemblance to the figure shown to him. When the subject is through with his drawing, a cardboard with a series of numerals is shown to him, he chooses any numeral he pleases.

Now on the margin of each slip is also a numeral, so that when the subject studies his pattern for reproduction, the number impresses itself subconsciously on his mind. Even, if at first, he notes the numeral, he soon ignores it, thinking that it is the number of the drawing in the series. He soon overlooks it; he does not see it consciously any more, but sees it subconsciously. In my experiments conducted by this method, the subjects had not the slightest suspicion of the real purpose of the research. They were sure that the whole matter was concerning imitation of the patterns and that the choosing of the numeral on the cardboard was but a device "to break up the attention," in passing from one pattern to another. The subjects were so intensely absorbed in the contemplation and then in the reproduction of the drawing which was extremely complicated, that they wholly disregarded the marginal numbers.*

(b) The method of subconscious impressions helps us to determine the relations of the subconscious to the

*The number of choices influenced by the marginal number seen subconsciously is noted down and the total number of choices is determined.

subject's self-consciousness. The mechanism of the method is simple, though important. We give the subject an impression that lies outside the range of his field of conscious sensibility, and ask him to guess the particular or general character of the stimulus or impression. We take a series of ten cards and tell the subject that on each of them there is a letter or numeral. We then put each card outside the field of his vision and ask the subject to look at it for some time and then to guess the character, particular or general. If letter *a*, for example, is shown to him and he guesses it correctly, then he guesses both the particular and general character, so that we may say that every correct particular guess is also a correct general guess. If he guesses a wrong letter, say *b*, he guesses correctly the general character only; if, however, instead of the letter he gives a numeral, say 6, then he fails completely. If we eliminate the chance element, we have the number of cases due to subconscious vision.*

Perhaps it may be well to mention a method of ap-

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*To eliminate the chance element and to find the percentage of correct guesses, both general and particular, due to subconscious vision, let y be the correct general subconscious guesses; let, again, x represent the correct particular guesses due to subconscious vision, p and p_1 the general and particular chance guesses. We have the following formulas (m and n being given by experiment):

$$(p+y) = m \qquad (1)$$
$$(p_1+x) = n \qquad (2)$$

$(p+y)$ are all the correct general guesses as mere general; (p_1+x), again, in the second equation are the correct particular guesses as particular. From (1), we have,

$$y=m-p \qquad (3)$$

These are all the correct general guesses. Now, in equation (3), p is 50 per cent., because each guess has only one alternative, letter or figure; in 100 observations, $p=50$; hence $y=m-50$.

Since there are only ten characters to guess in each particular case therefore in a hundred cases the chance element in equation [2] is ten, or $p = 10$ and $x = n-10$.

proaching the subconscious or as it is put in reaching the so called "suppressed complexes." This consists in giving the patient or subject a series of words and by observing the quality of the answers as well as the time of the reply made or the association time, the character of the "suppressed complex" is supposed to be reached, if the association time is found to be lengthened. The same can be done with the galvanometric reflex. When a special "complex" associated with a suppressed emotion is reached there is a greater galvanometric deflection. The same is claimed to be accomplished with other graphic records, such as sphygmographic, pneumographic, or plethysmographic records. Judging from what Pavlow has written to me that he and his collaborators are at work on the higher nerve activity of the brain of the dog, according to the methods of conditional reflexes, then it may be possible to study man's mental life or his reactions, however complicated, from observed glandular secretions. This fantastic prospect is at present as yet in the distant future.

I myself have done a good deal of work with all the graphic methods, sphygmographic, plethysmographic, pneumographic, and galvanometric.* I have taken sev-

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*In my work on galvanometric deflections carried out with Dr. H. T. Kalmus at the Research Laboratory of the Massachusetts Institute of Technology and at my Psychopathological Laboratory we come to the following conclusion:

"Our experiments clearly point to the fact that active physiological, sensory, and emotional processes, with the exception of pure ideational ones, initiated in a living organism bring about electromotive forces with consequent galvanometric deflections."

In my galvanometric work with Dr. L. Nelson performed on various animals, on man, frogs, rabbits and cats we arrive at the following conclusions:

1. Galvanometric deflections are brought about by psycho-

eral thousand tracings of each in normal and abnormal cases. *I can say without hesitation that from a clinical standpoint their worth is nil.* They are good as charts, as curves, as pictures and illustrations for the eye after the data are acquired, but as a guide for psychognostic or diagnostic purposes they are all worthless.

Similarly with the association method. Nothing is more misleading and clumsy than the asso-

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physiological processes (but not by purely ideational processes) under the influence of various stimulations.

2. These galvanic deflections termed by us "galvanic reactions" are not due to variations of resistance, whether of skin or of body.

3. The galvanic reaction is the result of variations of *electromotive forces produced* by the psycho-physiological processes set into activity by the agency of external or internal stimulations.

4. The causation of the galvanic reactions cannot be referred to circulation, nor can it be referred to secretory currents, whether of skin-glands or of other glandular organs.

5. The central nervous system and the sympathetic nervous system are alike excluded as factors concerned in the manifestation of the galvanic reaction.

6. *The galvanic reaction is a muscular cutaneous phenomenon* due to the influence of various agencies, emotional, sensory, physiological, chemical, thermal, electrical or mechanical.

7. The galvanic reaction is chiefly brought about by the muscles and glands within the circuit.

8. Prolonged active peristalsis gives rise to galvanic deflections which are due to the contraction of the muscles and the action of glands involved in the process of peristalsis.

9. The galvanic reaction diminishes and even completely disappears with the repetition of the same kind of stimulation.

10. This fall or complete disappearance of the galvanic reaction with the repetition of stimulation is usually due to a decrease of sensitivity in regard to the same repeated stimulation.

11. The fall however of the galvanic reaction may also be brought about by the action of a prolonged stimulation resulting in a gradual fatigue of the muscles in the circuit.

12. The heart-beat, like the contractions of any of the other muscles, gives rise to galvanic deflections.

Neither from a practical clinical standpoint nor from a purely theoretical, psychopathological standpoint can we say that the galvanometer is of any value. We can no more study mental states with a galvanometer than we can investigate ideas and feelings with a microscope or telescope. The trouble with the medical man is that he wishes to examine mental states as he examines urine,

ciation words, the replies, and the time taken. Some people may amuse or deceive themselves with it, but as to the insight which it gives into the delicate working of the human mind in general and of mental troubles in particular the value may be said without hesitation to be less than nothing. The results are misleading and deceptive. The late Professor James was fully right when he characterized this kind of psychological work as "Brass Psychology."

We can come more closely to the subconscious, in an imperfect way though, through dream states. Dream states belong to the region of the subconscious, but they reach our knowledge in a distorted and vague form, they rapidly fade away and melt under the light and warmth of the waking consciousness. It is a rare thing to remember fully a dream, as a rule but mere shreds remain, and often even these soon disappear or are totally absent on awakening. Still we must make the best we can of what is directly given to us.

Dreams may be studied either by the memorial method of self observation, by the statistical method, and by experimentation. There are five methods:

(1) The memorial method of self-observation.
(2) The statistical method.
(3) The psycho-physical method.
(4) The psycho-physiological method.

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sputum, blood, or bodily reflexes. This cannot be done in the case of mental states. There is no physical instrument with which mental states can be examined and studied. The sooner the medical man learns it, the less will he be carried away or be deceived by some new wonderful instruments for discovering hidden thoughts or measuring and photographing ideas and feelings. Introspection and observation, supplemented by the physician's or psychopathologist's introspective interpretation, will ever remain the tool of the psychologist and psychopathologist.

(5) The method of psychic stimulation.

(1) The memorial method consists in giving as complete an account of the dream from memory as it is possible. The dream is written down immediately after awakening, otherwise the whole may fade away altogether. Since many dreams occur during night and disappear, giving place to other qualitatively different states, and thus no memory is retained of those dreams on awakening in the morning, it is advisable for one who undertakes such an investigation to put near his bed a match, pencil, and paper, so that should he wake up any time during the night he may write down the dream immediately while he is yet in condition to catch a glimpse of the positive images left by the dream shadows.

(2) The statistical method consists in collecting dreams from many observers, classifying the dreams, comparing notes, and drawing conclusions. One, however, must use such material with great precaution as not all observers are trustworthy in such accounts. We must find out whether the records were taken immediately after the dreams, otherwise the facts must be rejected, or put at least under the heading of doubtful cases, since in such records later images from waking states may in all probability have been interpolated.

The first two methods bring us *indirectly* in relation with the subconscious. The other three methods bring us in more *direct* touch with subconscious life activities.

(3) The psycho-physical method or that of physical stimulation is the artificial production of dreams by means of physical stimulation of the special senses. The experimenter watches his subject while asleep and applies different stimuli to his peripheral sense-organs.

He pinches, pricks, squeezes the hand, leg, cheek or some other portion of the subject's body, he lights matches before the subject's eyes, drops water on his face, gives him something to smell, agreeable or disagreeable; makes him taste different substances and so on. Dreams are awakened by the stimulations the summation of which finally arouses the subject. In fact, some of the dreams occur during the short period of awakening. The subject tells his dream which is at once recorded by the experimenter.

(4) The psycho-physiological method or that of physiological stimulation consists in the artificial excitation of dreams by means of some stimulants, drugs taken before falling asleep. The dreams may be induced by anaesthetics, chloroform or ether, or by drugs such as chloral, veronal, medinal and other hypnotics.

(5) The method of psychic stimulation is the arousal of dreams by means of psychic stimuli, such as words. When the subject is in a deep sleep the experimenter in a low voice calls out some words or phrases. At first the subject does not seem to hear, but the words summate themselves at last, and the subject sometimes awakens with a start. Meanwhile the subject frequently has dreams formed by the floating images aroused by the speech. As soon as he wakes up he is to give an account of the dream, if any was formed. It is advisable, while making such experiments, to use words and phrases that are of intense interest to the subject, or words that are familiar to him, his own name, or the name of those who are near and dear to him, also names, words and phrases to which he is used to respond promptly. This may bring him out of his deep sleep, but may not have

sufficient power to awaken him fully. The words or phrases will thus be enabled to arouse images which will be formed into dreams, following the summation of the stimuli. We should bring the subject out of his deep sleep by degrees.

By means of the induction of the hypnotic state or by the induction of the hypnoidal state, or the twilight state we can come in direct touch with the subconscious.

The methods of hypnotization are various, but all of them must conform to the conditions of suggestibility. We can hypnotize subjects or patients by having fixed their attention on some bright object, by fixating attention on the expectation of some sudden bright light, on a glass, a crystal, or on some object held before the patient's eyes. The patient is also told to concentrate his attention on the sounds of suggestion of sleep given by the hypnotizer.

The hypnotic state can also be induced by passes. The patient concentrates his whole attention on the passes made over him. While the patient is concentrating his attention there should not be distracting noises. He should listen to the hypnotizer's monotonous voice or to some monotonously sounding apparatus.

Any monotonous stimulation in fact will do, such as monotonous stroking or patting; uniform alternation of light and shade, such as flickering, or uniform alternation of sound, uniform movement, swinging, rocking, or rotating will bring about the effect of plunging the patient into a hypnotic state. The patient's voluntary movements should be restricted, he should keep quiet and as much as possible, have his limbs completely relaxed. At the same time the patient's field of consciousness should be limited. Ideas should be banished as

much as possible. A state of *monoideism* should be induced. The subject should only think of "sleep, sleep, sleep." In short, all ideas and reasoning should be inhibited.

Sometimes all this can be brought about by a sudden strong stimulus unexpected by the patient. The intense emotion of fear aroused in the patient fixes the patient's mind on the stimulus which paralyses his consciousness and his motor adjustments. The patient falls into a state of physical and mental relaxation with a monotonous consciousness, into a state of physical and mental inhibition. These procedures produce that peculiar state known as hypnosis in which the subconscious comes to the foreground.

I have for many years employed a method which gives uniformly excellent results. I wish to attract the attention of the medical profession to this method of hypnoidization, as it is not only of theoretical importance for the purposes of psychopathological analysis, but it is possibly of still greater value for practical therapeutic purposes.

In *'The Psychology of Suggestion'* and in other works I have pointed out the following conditions of normal and abnormal suggestibility:

Normal Suggestibility.	Abnormal Suggestibility.
1. Fixation of attention.	1. Fixation of attention.
2. Distraction.	2. ———
3. Monotony.	3. Monotony.
4. Limitation of voluntary movements.	4. Limitation of voluntary movements.
5. Limitation of the field of consciousness.	5. Limitation of the field of consciousness.
6. Inhibition.	6. Inhibition.
7. Immediate execution of the suggestion.	7. ———

In the same work I come to the conclusion as the result of the investigation that "the nature of abnormal suggestibility is a disaggregation of consciousness, a slit, a scar, produced in the mind that may extend wider and deeper, ending at last in a total disjunction of the waking, guiding, controlling consciousness from the reflex consciousness. . . . Normal suggestibility is of like nature,—it is a cleft in the mind, only here the cleft is not so deep, not so lasting, as it is in hypnosis or in the state of abnormal suggestibility; the split is here but momentary, evanescent, fleeting, disappearing at the very moment of its appearance."

We have also shown that the laws of normal and abnormal suggestibility may be stated as follows:

"Normal suggestibility varies as indirect suggestion and inversely as direct suggestion.

"Abnormal suggestibility varies as direct suggestion and inversely as indirect suggestion."

The general law of suggestibility is:

"Suggestibility varies as the amount of disaggregation, and inversely as the unification of consciousness."

It is on these general laws and nature of relation of the personal consciousness to the subconscious that I have based my method of hypnoidization. In order

to reach the dissociated mental states we have to lay bare the subconscious, and this can be effected by the conditions requisite for the induction of normal or abnormal suggestibility, conditions which bring about a disaggregation of consciousness. In cases, therefore, where hypnosis is not practicable and the subconscious has to be reached, we can effect a disaggregation of consciousness and thus produce an allied subconscious state by putting the patient under the conditions of normal suggestibility: fixation of attention, distraction, monotony, limitation of the voluntary movements, limitation of the field of vision, inhibition, and immediate execution.

This is precisely what the method of hypnoidization consists in: "The patient is asked to close his eyes and keep as quiet as possible, without, however, making any special effort to put himself in such a state. He is then asked to attend to some stimulus such as reading or singing (or to the monotonous beats of a metronome) When the reading is over, the patient, with his eyes shut, is asked to repeat it and tell what comes into his mind during the reading, or during the repetition, or immediately after it. Sometimes the patient is simply asked to tell the nature of ideas and images that have entered his mind." This should be carried out in a quiet place, and the room, if possible, should be darkened so as not to disturb the patient and bring him out of the state in which he has been put.

As modifications of the same method, the patient is asked to fixate his attention on some object while at the same time listening to the beats of a metronome; the patient's eyes are then closed; he is to keep very quiet,

while the metronome or some other monotonous stimulus is kept on going. After some time, when his respirations and pulse are found somewhat lowered, and he declares that he thinks of nothing in particular, he is asked to concentrate his attention on a subject closely relating to the symptoms of the malady or to the submerged subconscious states.

The patient again may be asked to keep quiet, to move or change position as little as possible, and he is then required to look steadily into a glass of water on a white background, with a light shining through the contents of the glass; a mechanism producing monotonous sounds is set going, and after a time, when the patient is observed to have become unusually quiet, he is asked to tell what he thinks in regard to a subject relating to his symptoms. He may be asked to write the stray ideas down, if speaking aloud disturbs the induced states favorable to the emergence of the dissociated mental states.

In some cases it is sufficient to put the patient in a quiet condition; have his eyes shut and command him to think hard of the particular dissociated states.

The method of guessing has been for years utilized by my collaborators and myself as a clinical method for coming in contact with the subconscious, dissociated systems of which the patient remained unaware in his otherwise normal waking consciousness. The patient is put in a chair, or on a lounge, is told to be quiet and have his eyes shut. He is then told to concentrate his attention on some of the more prominent symptoms of his trouble and tell immediately any idea, phrase, sentence, picture or image that may at that moment enter his mind. In this way we obtain scraps from his

subconscious life activity, on fitting them together we have something to start with in the psychognosis of the cases.

I further combined this method with the methods of studying the patient's dreams. The patient's dreams are near the surface of his everyday waking consciousness, and since they are experiences coming from his subconscious life activity, I could, by the method of guesses, obtain the dreams which the patient experienced and which have often proved to be chips of experience which went to form his present mental make-up, and have been the cause of his present disease with all its characteristic symptoms. The patient often lived through in his dreams the events which caused his psychopathic malady. The experiences are usually obtained in chips, scraps, and bits. By piecing them together we penetrate more and more deeply into the patient's subconscious mental activity. This method of guesses together with the method of studying the dream activity yield, along with other methods, such as the *direct* observation of the dream activity and along with the hypnotic state, good material for psychognostic purposes.

My clinical and laboratory researches led me, however, by degrees to the discovery of the hypnoidal state which I have since found to be of the utmost consequence for psychognostic and psychotherapeutic purposes. In fact I found that in most of the cases what I thought to be a state of waking consciousness was in reality a hypnoidal state. In directing the patient to close his eyes and keep quiet and concentrate his thoughts on a definite symptom, dream or event in his life, I found that the patient passed into a

hypnoidal condition. This led me to the formulation of the *method of hypnoidization,* or *the induction of hypnoidal states.*

CHAPTER II

THE HYPNOIDAL TWILIGHT STATE

BY the method of hypnoidization we produce a peculiar state which, for the lack of a better term, I designate as "hypnoidal," twilight state. What is the hypnoidal state? The hypnoidal state is essentially a borderland state. The subject is apparently awake and seems to be in full possession of all his powers, and still he is more closely in touch with the dissociated experiences than he is otherwise in the full waking state. Perhaps the *subwaking* state would possibly be an apt term for the hypnoidal condition. The subject seems to hover between the conscious and the subconscious, somewhat in the same way as in the half-drowsy condition we hover between wakefulness and sleep.

The hypnoidal state is not a stable condition, it keeps on fluctuating from moment to moment; now falling more deeply into a subconscious condition in which outlived experiences are easily aroused, or again rising to the level of waking states. In such conditions the patient often tells you "something has come . . . , but it is gone." The hypnoidal state has changed, it has become lighter, and the dissociated moments have become again submerged. There is a constant struggle going on in the hunting out of the stray dissociated systems.

The state brought about by hypnoidization is essentially a transient, evanescent, mental disaggregation of

the personal consciousness from the reflex subconsciousness. The hypnoidal state borders closely on light hypnosis; and still it is not exactly a hypnotic state and may be regarded as an intermediate state. In a series of experiments on the nature of sleep of lower animals as well as of infants and adults, the facts tend to indicate that the hypnoidal state is intermediary between hypnosis and sleep on the one hand and the waking state on the other.

The hypnoidal state may either lead to sleep or to hypnosis.

The close relationship of the hypnoidal state and of hypnosis is sometimes forcibly brought to the attention of the experimenter. Some patients while in the hypnoidal state are observed to become unusually quiet, less talkative, become relaxed, and after a time a distinctly cataleptic condition of the extremities may be observed. The patient has apparently passed into hypnosis. In most of the cases the hypnosis is of brief duration, while in a few cases the hypnosis may become lasting and deep. On the other hand, in many cases the subject falls into a sleeping state without as much as touching on hypnosis.

The hypnoidal state is an intermediary state, intermediate between the waking state, sleep and hypnosis. 'Subwaking' may possibly be an appropriate descriptive term of the character of the hypnoidal state. The subwaking, hypnoidal state, like sleep and hypnosis, may be of various depth and duration; it may range from the fully waking consciousness, and again may closely approach and even merge into sleep or hypnosis. The same patient may at various times reach different levels, and hence subconscious experiences

which are inaccessible at one time may become revealed at some subsequent time, when the patient happens to go into a deeper level of the hypnoidal state.

On account of the instability of the hypnoidal state and because of the continuous fluctuation and variation of the depth of its level, the subconscious dissociated experiences come up in bits and scraps and often may lack the sense of familiarity and recognition. The patient often loses the train of subconscious associations; there is a constant struggle to maintain this highly unstable hypnoidal state, and one has again and again to return to the same subconscious train started into activity for a brief interval of time. One must pick his way among streams of disturbing associations before the dissociated subconscious experiences can be synthetized into a whole, reproducing representatively the original experience that has given rise to the whole train of symptoms.

The hypnoidal state may sometimes reproduce the original experience which, at first struggling up in a broken, distorted form and finally becoming synthetized, gives rise to a full attack. The symptoms of the malady turn out to be portions, bits and chips of past experiences which have become dissociated, subconscious, giving rise to a disaggregated subconsciousness. The method of hypnoidization and the hypnoidal states induced by it enable us to trace the history and etiology of the symptoms and also to effect a synthesis and a cure.

Any arrangement of external circumstances tending to produce monotony and limitation of voluntary movements brings about a subconscious state of suggestibility in which mental life can be affected with

ease. I find that in that subconscious state, consciousness is vaguer than in the waking state, and memory is more diffused, so that experiences apparently forgotten come in bits and scraps to the foreground of consciousness. Emotional excitement becomes calmed, voluntary activity is somewhat passive, and suggestions meet with little resistance. The induced subconscious state is a rest state, a state of physical and mental relaxation. It is a state of rest and relaxation that is specially amenable to psychotherapeutic influences. The important results obtained by me led me to a closer study of what I then thought was a peculiar mental state designated by me as the twilight *subwaking, or the hypnoidal state.*

The subwaking, or hypnoidal state is essentially an intermediary twilight state belonging apparently to the borderland of mental life. On the one hand, the hypnoidal state closely touches on the waking condition; on the other, it merges into sleep and hypnosis. *A close study of the hypnoidal state shows that it differs from the hypnotic state proper and that it can by no means be identified even with light hypnosis.* In my years of work on patients and subjects, I have observed the presence of the hypnoidal state before the development of hypnosis and also before the onset of sleep. When again the hypnotic or sleep state passes into waking, the hypnoidal state reappears. The hypnoidal state then may be regarded as an intermediate and transitional state.

A somewhat related state has been long known in psychological literature as the hypnagogic state which precedes the oncome of sleep and is rich in hallucina-

tions known under the term of hypnagogic hallucinations. In coming out of sleep, a closely-related state may be observed, a state which I have termed *hypnapagogic.* In both states, hypnagogic and hypnapagogic, dream-hallucinations hold sway.

The hypnagogic and hypnapagogic* states do not belong to light hypnosis, as it can hardly be claimed that men fall into light hypnosis twice or possibly more than that every day of their life. We do not go into light hypnosis with every nap we take. We do, however, go into the hypnoidal state when we pass into sleep or come out of sleep. Every drowsy state has the hypnoidal state as one of its constituents; every sleep state is preceded and followed by the hypnoidal state.

Hypnosis may be regarded as belonging to abnormal mental states, while the hypnoidal state is more closely allied to waking and sleep and, as such, belongs to the normal, physiological, mental states. At first, I regarded the hypnoidal state as peculiar, but as I proceeded with my observations and experiments I could not help coming to the conclusion that the hypnoidal state is found in all the representatives of animal life and is as normal as waking and sleep.

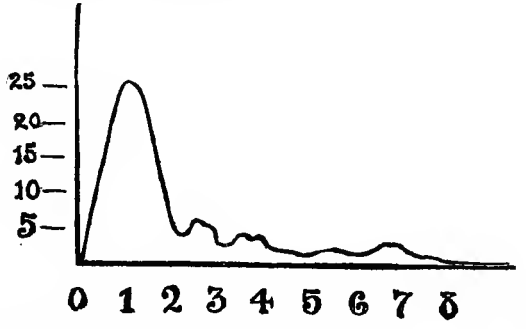
The hypnoidal state may be said to partake not only of the nature of waking and sleep, but also to possess some characteristics of hypnosis, namely, suggestibility. It is clear that from the very nature of its mixed symptomatology the hypnoidal state is variable and highly unstable. *The hypnoidal state may be regarded more in the light of an equivalent of sleep.* Like sleep, the hypnoidal state has many levels of depth. It differs,

*Hypnagogic states are hallucinatory dream states appearing just before falling asleep, hypnapagogic are hallucinatory dream states experienced just before waking.

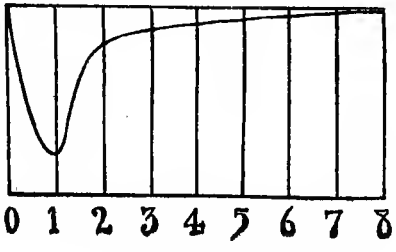
however, from sleep in the rapidity of oscillation from level to level.

In the experiments of various investigators, the depth of sleep is found to be represented by a rapidly rising curve during the first couple of hours and by a gradually descending curve during the rest of the hours of sleep.

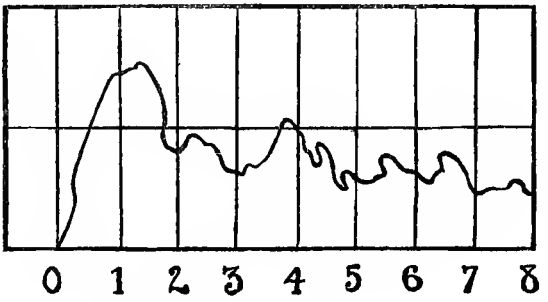
Michelson measured the depth of sleep by the intensity of sound stimuli that can awaken the sleeper. The stimulus was the fall of a ball of a definite mass through a definite distance. Plotting the hours of sleep on the abscissa and the sound stimuli in thousands of grammocentimeters, he finds the curve of sleep falls rapidly after the first hour.



Kohlschütter, who also worked with sound stimuli, represents the sleep curve as follows:



Sante de Sanctis and Nevroz worked with the aesthesiometer on the senses of touch and pressure; they found that the sleep curve should be represented as follows:



No such regularity of curve can be found in the hypnoidal state. The depth of the hypnoidal state changes very rapidly, and with it the passive condition and suggestibility of the patient.

CHAPTER III

THE HYPNOIDAL TWILIGHT STATE IN ANIMALS AND INFANTS

I FIND in my experiments on the induction of the intermediary hypnoidal states in man that the conditions of monotony, limitation of voluntary movements, limitation of the field of consciousness are of the utmost consequence. In my experiments on animals I followed the same line of work and as far as possible reproduced the same conditions. I tried to limit the incoming sensory impressions, to limit the voluntary movements, relax them as much as possible and produce a *monotonous* state by the continuous inhibition of new and varied stimulations. After narrowing down the animal's psycho-physiological activity I invariably found that when I succeeded in maintaining closely the same conditions which have been found favorable in human subjects for the induction of subwaking states, the animal uniformly fell into a passive condition closely analogous to the subwaking state and in many instances into a deep sleep.

The condition of the animal was often strikingly similar to the one observed in the human subject. The respiration and pulse were lowered, while mental activity in the higher animals, alertness of sensory and motor reactions to external stimulations in the lower animals became greatly reduced and even completely suppressed. In the higher animals, such as dogs, a transitory cataleptic state, a state in which the voluntary

muscles retained the position given to them, could be observed accompanied by a disturbance of respiration and heart-beat.

The slight disturbance then subsided and calmness supervened. The calm lasted but a brief period of time and the disturbances reappeared. The latter were once more succeeded by calm which ended by a full waking state or by a deep sleep. In other words, the experiments, allow me to draw the conclusion that I had here the typical manifestations observed under the same conditions in the human subjects. I found here the manifestations characteristic of the intermediary hypnoidal states, the animal now passing into waking and now falling into sleep.

In the series of experiments carried out on frogs I find present the conditions of monotony and limitation of voluntary movements as well as of limitation of what may be regarded in the frog as consciousness, or of the limitation of the activity of the sensorium by cutting off the regularly incoming sensory stimulations. As a result we find something analogous to what we should have expected in the human subject under like conditions, namely, the presence of peculiar passive states,—that is all that we are thus far justified in saying of them, observed and described by experimenters who do not have the possibility of getting the subjective experience of the animal under observation.

What we find in the state of the frog is a condition somewhat analogous to what we have found in our experiments in the human subjects namely the *presence* of *intermediary states* of the *subwaking hypnoidal type*. The symptoms observed differ somewhat, but in general they may be regarded as alike. We find a

passive state with cataleptic manifestations. The state varies from catalepsy to relaxation, or what may be regarded as lethargy, and again from passivity to activity, from sluggish to very lively reactions in response to external stimulations. We have therefore here, manifestations which remind one of like manifestations in the human subject, namely, subwaking hypnoidal states which are on the borderland of waking, hypnosis, and sleep.

Of course, we should not expect to find that frogs which stand so low in the scale of vertebrates would manifest phenomena of the higher vertebrates, but we should expect that some similar phenomena, though otherwise widely different, would be present. This is precisely what we find in the frog. We find the *general* characteristics, though rather vague, of what is afterwards fully developed in man as the subwaking, hypnoidal state.

We must remember besides that the hypnoidal state is very unstable and its manifestations, having the characteristics of waking-state, sleep, and hypnosis greatly vary in different individuals, and at different times in the same individual. We should therefore expect that the hypnoidal state would show still more radical differences from the typical in the various species of animals, especially in those that stand so far apart from each other as frog and man. What is surprising to me is not the variation and great difference of the hypnoidal state in the frog as contrasted with that of man, but that the difference is really not far greater, considering the gap that exists between the two organisms. In fact, the similarity is far more striking than the difference between the hypnoidal states of the two con-

trasted organizations so widely apart in the scale of evolution.

My view then is that *the phenomena observed in the frog are hypnoidal in character.* The phenomena themselves as well as the conditions under which they are induced warrant my view of the hypnoidal nature of the states.

In this respect we can well understand the apparent disagreement of the early observers on the subject. Czermak and Danielewsky regard the phenomena as being of the hypnotic order, Heubel regards them as being more of sleep states, while Preyer views them as being the results of fright which give in the waking state cataleptic manifestations closely similar to those observed in hypnosis. Verworn who regards the phenomena as "Lagecorrectionen" due to central inhibitions really does not conflict with any of the views. It is simply a general physiological hypothesis which may be in accord with any view, a physiological hypothesis which may or may not be true; it is a hypothesis far removed from the special facts and should be tested on its own merits.

My point of view is not a matter of hypothesis, but describes and explains the phenomena in terms of states having similar manifestations and produced under the same conditions, states which are more developed and stand out more pronounced in higher animals. These states possess many of the characteristics of the waking state, sleep, and hypnosis. Hence the reason why the early observers regarded the phenomena as waking states, others considered them as hypnosis, while other investigators regarded the phenomena as sleep states.

As a matter of fact the phenomena and the conditions under which they are induced make the view highly probable that the different investigators are not far from the truth, but not being acquainted with the peculiar hypnoidal states described, they observed the phenomena in too one sided terms, in terms of sleep, or hypnosis, or of waking states. In reality the phenomena and conditions under which they are induced point strongly to the fact that the states are hypnoidal in character, states which partake at once *of all the three apparently contradictory manifestations,*—waking, sleep, and hypnosis. Now the manifestation of the waking-state, now the symptoms of sleep, and now again those of hypnosis predominate.

The state induced in the frog under the conditions of monotony, limitation, and inhibition is a *variety of the subwaking, hypnoidal states.* This induced hypnoidal state, being intermediary in character, may either partake of the catalepsy of hypnosis strongly modified and manifesting itself differently in the frog than in the human subject, or may again go over into the passive state of "sleep" or some state analogous to it.

It is perhaps of importance to call attention to the significant fact that the first stages induced in the frog are rather of an unstable character,—the frog when put on its back and kept down for but a short time falls into an apparently cataleptic state of short duration. The animal soon rights itself and is fully awake as before. This instability is very characteristic. Now the hypnoidal states are characterized by this fundamental trait of instability. It is only when the condition of monotony, limitations of voluntary movements and inhibition are sufficiently prolonged, that the cata-

lepsy becomes more or less fixed for some period of time; and when this passes off, and the conditions under which the frog is kept are continued still further, it is only then that the frog sinks into a passive state which may last indefinitely, unless brought out of it by some strong stimulation. It seems to me then, that if we take all this into consideration, we cannot possibly describe the state in which the frog is put, in other terms than what we have on other occasions discovered to be the intermediary, subwaking, hypnoidal state.

The experiments on guinea-pigs gave results somewhat similar to those of the frogs, though the cataleptic states were not so pronounced,—in fact they were transient. Still the induction of sleep was brought about under conditions of monotony, limitation, and inhibition. It was far more difficult to bring about rest or passive states in guinea-pigs than in frogs, on account of the great liveliness and ceaseless activity of the pigs.

At times anaesthetics were resorted to in order to facilitate the production of hypnoidal states. It may be objected that the anaesthetics somewhat modified the result, because it may be claimed that the sleep-states induced were really due to the anaesthetics used. This objection however can be easily obviated by the rejoinder that the action of the anaesthetic was only to reduce the extraordinary activity and restlessness of the animal and thus make it easier to induce sleep.

The sleep-states themselves were really produced under the same conditions as were the ones induced in frogs and in my human subjects. In fact even when the guinea-pigs were really lively and active it was sufficient to subject them to the conditions described, when they gradually fell into a state very much of the char-

acter of hypnoidal states and sleep. The phenomena though were not so well marked as in the frogs.

A set of experiments were carried out by me on birds and chickens with similar surprising results. The birds were subjected to the general conditions of hypnoidization. In all the subjects the manifestations of the hypnoidal state were clearly observed.

In the experiments on kittens we find the phenomena of the subwaking states somewhat more developed than in the guinea-pigs or in the frogs. The cataleptic phenomena are not so pronounced as they are in the frog, but the manifestations of the subwaking states approach more closely the manifestations observed by me in human subjects. The state is more hypnoidal in character, there is present the transient scarcely perceptible catalepsy which appears for but a moment, giving way immediately either to sleep, or to the waking state.

Of course, we should not expect to meet with a typical, fully developed suggestibility or somnambulistic state in guinea-pigs or in kittens, considering the fact that even in man, the imbecile, the idiot, and the mentally obtuse hardly go into any such a state. It requires a mind of a highly organized constitution to get into a state of abnormal suggestibility and of somnambulism with their accompanying manifestations. What, however, we do find is the characteristic instability of the manifestations of the intermediary, subwaking, hypnoidal states, having some of the most general somatic symptoms of hypnosis, such as slight catalepsy, but leading into a passive condition on the intensification of the state. The state in which the animal is plunged under the condition of monotony

and limitation is *hypnoidal,* leading towards sleep.

Dogs are subject to the same conditions of sleep states as is the case with other animals experimented upon. The experiments on dogs bring out the fact that the conditions requisite to induce hypnoidal states in men also hold good in the case of dogs. The hypnoidal states, both in falling into, as well as rising from sleep, are far more pronounced in the dog than in the lower animals experimented upon; the states themselves come up far more closely to similar states observed in man under the same conditions of monotony, limitations, and inhibition than they do in other animals, such as the frog, the guinea-pig, the cat.

Phylogenetically regarded, the hypnoidal is the primitive "rest state" out of which sleep and hypnosis have become differentiated. The lower the animal the more insecure, the more unstable are its "rest states." The animal must be on the alert in its rest, and "sleep" if at all, with its eyes open, so to say. It must be quick to wake and run from danger, or if it cannot get away, it must "freeze and feign death." In other words, it must be able for the sake of protection to fall into a state of catalepsy. Hence the rest states must partake of waking, sleep, and hypnosis, that is, must be essentially hypnoidal in character.

The experiments on dogs are more instructive than the ones carried out on other animals, because they clearly bring out the general principle of monotony and limitation in the causation of sleep. *Diminution in the variability of the volume of sensory impressions brings about the hypnoidal state as well as that of sleep.*

The experiments on animals were followed by ex-

periments on children. The subjects were of different ages ranging from infants a few days old, to children twelve and thirteen years of age.

It is well known that children usually fall asleep more easily than adults; they sleep longer and also more soundly. This is specially the case with young children and particularly with infants. We know that an infant passes most of its time in sleep, when it does not eat. We should expect therefore that the material would readily lend itself to our present purpose of experimentation,—to the induction of sleep states.

As a matter of fact, I find that in a number of my cases dealing with children it is no difficult task to put them to sleep, or to induce some form of subwaking state, hypnoidal or other closely allied to it. The child easily falls into a subwaking, hypnoidal state. When trying to put children to sleep I have often obtained a hypnotic condition, and on the other hand when attempting to put my little patients into a hypnotic state I have only succeeded in putting them to sleep. Before going, however, into either the hypnotic or sleep state, I observed, by close examination, the presence of the hypnoidal state, induced under the conditions of monotony and limitation of voluntary movements.

Since limitation of the voluntary activity, limitation of the field of consciousness, and inhibition all help to a greater monotony, we may characterize the whole set of conditions requisite for the induction of sleep as the conditions of *monotony*. In children, especially in infants in whom voluntary activity and the field of consciousness are undeveloped and limited, we should expect the child would form a far better soil than the adult for the induction of the intermediary subwaking

states and sleep. This is precisely what we find to be the case.

Moreover, the mind of the child, and more particularly that of the infant, specially depends on muscular activity and on the wealth of incoming sensory impressions. That is why the child and the infant take such delight in motor activity,—in tasting, testing, and handling things. If now the motor activity is limited and the main source of sensory impressions, such as sight is restricted, and if the environment is kept in a state of monotony, such as darkness and lack of auditory stimulation, or monotony is brought about by continuous noise and buzzing of some instruments producing a uniform noise, the child, on account of the poverty of its inner mental life, easily falls into a subwaking, twilight hypnoidal state, and then into sleep.

Thus we find that in infants, and children, as in lower animals, sleep, hypnosis, and twilight hypnoidal states are intimately related.

CHAPTER IV

THE HYPNOIDAL TWILIGHT STATE AND SLEEP

MONOTONY and limitation of voluntary movements work in one direction—they tend to raise the thresholds of psycho-motor reactions, they cooperate in the induction of sleep. These conditions are usually brought about naturally in the course of the daily or nightly life activity of the individual organism, or the conditions may be produced artificially. In both cases the result is the same—the organism falls asleep. In the life of higher animals the two cases may often combine. When the individual has fagged out his life interests in his active relations with his surroundings, when the stimuli have become monotonous to him, and his activity with its correlative motor consciousness has become limited and lowered, he makes artificial arrangements for the intensification of the conditions of monotony and limitation of voluntary activity. He seeks for a dark nook, closes his eyes to exclude as much as possible all extraneous disturbing stimulations and tries to lie down quietly and comfortably, restricts his voluntary movements, breaks his connection with the external world, and goes to sleep. *The organism falls into sleep, when the thresholds rise, wakes and rises when the thresholds fall.**

Looked at from a physiological standpoint and expressed in terms of energy, of the "cell energy," sleep

*By threshold is meant the just perceptible stimulus requisite to set a system into activity.

may be regarded as the onset of fatigue, as the onset of exhaustion of the levels of dynamic energy in response to external stimuli. Each particular stimulus has its maximum amount of energy which can be drawn upon, under ordinary conditions of daily life. As the special stimulus approaches its limit, it works under greater and greater difficulties, draws less and less energy, and finally ceases to awaken any response,—the threshold is raised to its maximum and the organism, as far as that special stimulus is concerned, is no longer awake,—the organism is asleep.

In the course of its daily activity the same takes place in regard to most of the objects, to most or to all of the stimuli that constitute the external world of the organism. The stimuli of the external world have drawn all that was permitted to them on their bank accounts, so to say, and the account for the time being is closed. Nothing more is permitted to go out. No stimulus of ordinary life is permitted to draw over and above a certain amount. There must always be ready capital for unusual situations, for emergencies. When the stimuli have drawn their due, and the organism is left with its reserve energy, liberation of energy with its accompanying waking states ceases. The organism is no longer awake to the stimuli and is asleep.

As in the waking states the katabolic processes predominate, so in sleep the reserve processes, the anabolic, take the upper hand. The organism begins to recuperate its losses and fills up the accounts drawn upon by the stimuli of the external environment, when in active relation with them. With the increase of the income of energy the raised thresholds begin to fall until a

point is reached when the stimuli once more overstep the lowered thresholds and once more gain access to the stores of life-energy,—the organism awakes and enters into active relations with the environment.

Regarded then from various standpoints, sleep is a rise of moments thesholds under conditions of monotony and limitation of voluntary movements. In this respect sleep strongly contrasts with hypnosis. In hypnosis the individual is especially accessible to any kind of suggestions coming from the external world, the psychomotor reactions are greatly lightened and are released by the suggestions or external stimuli with great facility, far greater than in the waking state. This great facility is often expressed by the statement that in hypnosis the inhibitions are removed.

What specially characterizes *hypnosis is the fact of fall of thresholds,* present in individuals, with a predisposition to states of dissociation; in sleep on the contrary we have found from our study, the general characteristic is the *rise of psychomotor thresholds.*

In passing from the waking state into the subwaking hypnoidal state the individual may either pass into hypnosis with its dissociated states and lowered psychomotor thresholds, or may go into sleep with raised psychomotor thresholds. *The process of redistribution of thresholds in the hypnoidal states brings about a fall of thresholds, due to predisposition to and further cultivation of dissociations, the result is hypnosis; when the redistribution in the twilight states brings about a rise of thresholds, the result is sleep.*

The sleep states of higher animals are developed out of undifferentiated, intermediary, subwaking, hypnoidal-like states found in the resting states of the low-

er representatives of animal life. The hypnoidal state is the primitive rest state out of which sleep arises. Briefly put, *the hypnoidal state is the germ of sleep.*

CHAPTER V

THE PRIMITIVE REST-STATE

THE long series of experiments carried out on frogs, rabbits, guinea-pigs, kittens, dogs, infants and adults clearly prove that the hypnoidal state is by no means confined to man, but is also present in animals. This is very important as it shows indubitably how widely spread the hypnoidal state is throughout the domain of animal life. Moreover, the experiments clearly prove that the further down we descend in the scale of animal organization, the more prominent, the more essential, does the hypnoidal state become.

The conclusion is forced upon me that the *hypnoidal state is the primitive rest-state out of which sleep has arisen in the later stages of evolution.* We may say that sleep and hypnosis take their origin in the hypnoidal state. Sleep and hypnosis are highly differentiated states; they have evolved out of the primitive, undifferentiated, hypnoidal state which is essentially a subwaking rest-state characteristic of early and lowly-organized animal life. *The hypnoidal state is the primordial sleep-state.*

The development of the hypnoidal state into sleep has proven itself useful in the struggle for existence of the higher animals; it has, therefore, become fixed as the rest-state characteristic of the higher representatives of animal life. Hypnosis, as well as other trance-states, variations of the primitive, hypnoidal rest-state, have become eliminated as useless and possibly harmful to the normal life adjustments of the higher animals and

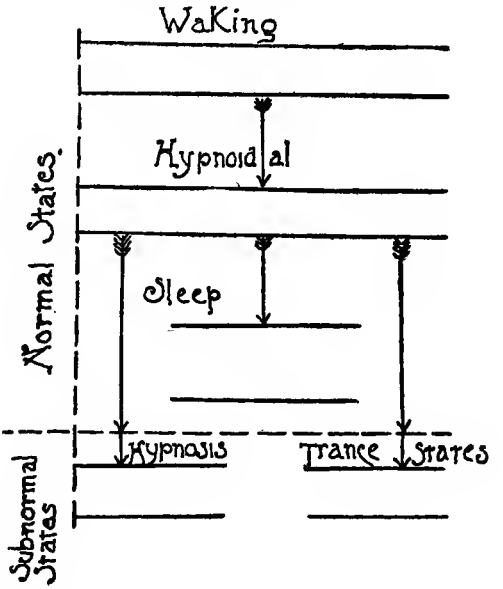
can only be induced under artificial conditions in but a fraction of the human race. The hypnoidal state is the normal rest-state of the lower vertebrates and invertebrates. The rest- or sleep-state of the lower animals is a sort of a passive waking state,—a subwaking state which has survived in man as the hypnoidal state. Of course, the state has been largely modified in man by the course of evolution, but it can still be clearly detected, just as the tail of the simian can be discerned in the human coccyx, or as the structure of the prehensible hand of the quadrumana can be still clearly traced in the foot of man. Waking, hypnoidal and sleep-states may be termed *normal states,* while *hypnosis* and various other trance-states may be termed *subnormal* states.

The hypnoidal state is normal, it is present in all the representatives of animal life. Sleep, hypnosis, and trance-states are variations of the fundamental hypnoidal state. The sleep-state has proven useful and has become normal in the higher animals, while hypnosis and the various forms of trance-states, likewise variations of the fundamental hypnoidal states and characteristic of man, have not proven of vital value and have fallen below the normal stream of consciousness with its concomitant adaptive reactions.

The hypnoidal state is necessarily brief, variable and unstable. They who have observed the rest-states of the lower metazoa can form a clear idea of the nature as well as of the biological significance of the hypnoidal state in the life of the lower animals. The animal is at rest for a brief period of time as long as it remains undisturbed by external conditions of its environment, or by internal conditions, such as hunger, sexual impulses or other internal disturbances. Soon

the animal begins to move, sluggishly at first, and then more quickly, and, if there are no disturbing stimulations, comes to rest, to be again disturbed from its rest-equilibrium by the varying conditions of its environment. The resting state is brief, irregular, in fits so to say, and differs from the waking state in but a slight relaxation and in comparatively slow reactions to stimulations and in a passive condition of the muscular system. Respiration becomes a little more regular and diminished in rate, the heart beat is slightly decreased and general katabolic activity is somewhat reduced.

The relation of the hypnoidal state to waking, sleep, hypnosis and other subconscious states may be represented by the following diagram:



The animal, however, is quite alive to what is going on all around. The animal rests watching for danger. The resting and active states alternate periodically, if possible, but usually quite irregularly. The resting state is but a passive condition in which the animal may be considered to hover between waking and what we describe in the case of the higher animals as sleep. Sleep in its proper sense does not exist among the lower representatives of animal life.

This state of hovering between waking and sleeping, the characteristic of the hypnoidal state, is no doubt of paramount importance in the life-existence of the lower animals, considering the numerous dangers to which they are continually exposed. The animal must always be on the watch, either for food or for foe. It can only rest or "sleep" with its eyes wide open. The hypnoidal "sleep" can be best characterized as a *subwaking* rest-state.

I demonstrated in my experiments that the animal while in the hypnoidal, subwaking rest-state is apt to fall into a cataleptic state, especially when the movements are suddenly and forcibly inhibited. This cataleptic state, which reminds one of the hypnotic state, may be observed in the lower animals, such as the frog, the snake, the lobster, the bird and, to a slighter degree, even in the higher animals, such as the guinea pig, the cat, the dog; especially in the young ones, such as the kitten, the puppy and the infant.

There is little doubt that the cataleptic state into which animals fall during the hypnoidal rest-state is of some protective value in their life. The animal "freezes," "feigns death" and is thus either enabled to remain undetected by the animal on which it feeds or, what is

still more important, is enabled to remain unnoticed by its enemy and thus escape certain death. The subwaking, hypnoidal state may be regarded as the fundamental rest-state of lower animals and is characterized by a mixed symptomatology of waking, sleep, and hypnosis.

The hypnoidal state is found in man but in a rudimentary condition; it is a vestige of man's primitive, animal ancestors. The hypnoidal state is brief, variable, and forms the entrance and exit of repose, the portals of sleep. The primordial rest-state has shrunk to a transitory, momentary stage in the alternation of waking and sleep. The subwaking, hypnoidal rest-state shrinks with the increase of security of life.

From a therapeutic standpoint the hypnoidal state has proven to be an efficacious agency in effecting cures in psychopathic cases often of a severe character. The great value of the hypnoidal state consists in the fact of its being a most powerful instrument in tracing the past history of the case, in learning the evolution of the symptoms of the disease and in the discovery of the early germs of the fully developed symptom complex under observation and treatment.* The study of the evolution of the malady, tracing its roots down to early child life, thus getting a full knowledge of the patient or the subject is termed by me *Psychognosis.*

*Dr. Leo Hirschlaff, of Berlin, in a recent communication tells us of the great psychotherapeutic value of the rest-state (a form of hypnoidal state). He has even invented a couple of instruments for the induction of that state,—the hesychiscope and the respiration metronome.

CHAPTER VI

PSYCHOGNOSIS AND THE HYPNOIDAL TWILIGHT STATE

IN the hypnoidal state chips of former outlived experiences come under certain conditions to the surface of consciousness. What these conditions are we have described in this work. We can only add that in the hypnoidal states lost memories can be reproduced. The patient is put under conditions favorable to the induction of hypnoidization and is asked to make mental efforts to bring up the lost psychic content. Once the patient discovers the successful working of this method, he begins to notice auto-hypnoidization, thus bringing to light many hidden memories and finally bringing about a synthesis of the dissociated subconscious moments.

Memories in hypnoidal states may be induced spontaneously without the patient actually intending it and sometimes under the influence of mental strain, excitement, or effort. The hypnoidal states may come up in a rush, as if hampering flood gates have broken down, and become associated and synthetized with the present functioning moment, with the present state of self-consciousness.

I shall give here an account of the hypnoidal states as first observed by me in the classic case of the Rev. T. C. Hanna. When in the hypnoidal state any scene or word or name came up before his mind, it was completely wanting in the elements of recognition and familiarity. A name, for example,

came up before his mind; when asked of what he was thinking, he would simply give the name, but when we pushed our inquiry further and asked as to the meaning of the word, he replied he did not know. When told it was the name of a person or of an object, he was greatly surprised that what appeared to him as a combination of "nonsense syllables," arbitrarily arising in his mind should have a definite meaning. When he was asked if he had any vague feeling of ever having heard the word before, he invariably replied in the negative.

Still more remarkable was the fact that at times, in the hypnoidal states, an entire scene or event arose before his mind; he could describe the scene or the event of his former life-experience exactly as he saw it in his mind's eye; he could describe minutely all the details and yet he had not the slightest trace of recognition that the incident was a former experience of his own. It was to him like arbitrary combinations of images and ideas, somewhat in the way as they take place in our waking reveries or in the dream states of sleep.

As an example of such hypnoidal states, we may mention the mental condition of the patient during the recital of a Hebrew passage. Being a minister and having studied Hebrew at Yale, Mr. Hanna in his secondary state was tested with texts from the Hebrew Bible, texts with which he had been familiar in his previous life. What happened was striking in the extreme. During the recital of the Hebrew phrase, a flood of Hebrew passages came into his mind. He recited them aloud in that solemn intonation in which the Hebrew Bible had been studied by him in college. When asked the meaning of the phrases, he was at a loss, he had not the slightest notion what that all meant. It was to him a sort

of "speaking with tongues' "-affair, a mere conglomeration of meaningless syllables, mere gibberish. As in the phenomenon of "speaking with tongues" the patient was frightened at the sudden outburst of a flood of meaningless jargon.

Moreover, the memory for the part read to him was not bad, he was able to repeat each word and sometimes a couple of words and even a phrase as it came from the reader of the text. The texts brought up in the hypnoidal state were gone from his memory as soon as he delivered them, only a few distorted words could be gotten out of him; the rest vanished from his memory.

It was also of importance to notice that instead of imitating the reader who recited the texts to him, as one should expect in a case of imitating unknown words and phrases, the patient had a different inflection and a widely different pronunciation from those of the reader. They were resurrected memories of a buried personality, memories which lightning-like flashed on and vanished from the patient's mind.

The unexpected sudden change in tone and manner of the patient's recital of the Hebrew phrases which in the hypnoidal state arose from the patient's subconsciousness were striking in the extreme. His voice became strong and sonorous, he recited impressively, as though from the pulpit. It seemed as if the words and phrases burst forth spontaneously and involuntarily in a moment of inspiration.

As an instance of another hypnoidal state we may mention the following: Miss C. to whom the patient was greatly devoted in his former life, and whom he married after the complete cure and restoration of his

former personality, was a perfect stranger to the secondary personality. In one of the experiments this young lady was directed to take the patient's hand and sing a hymn which the young man had heard in his former, primary, personal existence, but had not heard since the injury.

The patient was told to remain quiet and listen attentively to the hymn. During the song the patient remained passive, his whole attention was concentrated on the song. When the hymn was finished, he was asked whether he had ever heard anything like it before, he looked at us in bewilderment. When asked what had come into his mind during the singing, he gave two words which turned out to be names of people. The patient did not know the meaning of the words and certainly did not suspect that they were names. We learned from the family that the names were those of choir-singers whom he knew some three years ago. The names flashed from the subconscious on the patient's memory, but without the slightest sense of recognition.

I bring the experiments from the Hanna-case, because of its extreme form of dissociation the characteristics of the hypnoidal state stand out clear and distinct, more so than they do in other cases in which the state of dissociation is comparatively slight. In the ordinary psychopathic cases the hypnoidal state does not present such a complete lack of recognition, still the memories appearing in such states are vague, fragmentary, being apparently devoid of all meaning, "perfect nonsense" as the patient often puts it, and as such tend to fade, like the shadowy experiences of the dream states, into oblivion.

The chance phrases however are not accidental occurrences, they refer to the patient's former experiences, and give an insight into the very depths of the patient's subconscious life-activity. The hypnoidal state, the state in which all those vague, fragmentary, subconscious memories occur is one of the most potent instruments of Psychopathology and Psychotherapeutics.

CHAPTER VII

THE HYPNOTIC STATE

THE hypnotic state was studied by me many years ago in my *"Psychology of Suggestion."* I give here a few brief statements sufficient for our present purposes: The hypnotic state requires the following conditions:

(I) The first condition is that of *fixation of attention.* Thus Braid used to hypnotize his subjects by fixing their attention on some brilliant object or point. He considered a steady attention indispensable, if hypnosis were to be obtained; the subject must look steadily at the object, he must think only of the thing he is fixating, and must not allow his attention to be diverted from it. The ability to direct one's thought in one particular direction is very favorable to hypnosis. They who cannot fix their attention, who are absent-minded, introspective or scatter-brained or hopelessly stupid cannot be hypnotized.

(II) *Monotony of impressions* is another condition of the hypnotic state. The subject must be put into a relatively uniform environment and subjected to a series of monotonous stimulations. My method of hypnotization consists in forming monotonons surroundings; the light is lowered, a profound silence reigns in the room; then monotonously stroking the skin of the subject's forehead and in a low, muffled, monotonous voice go on saying: "sleep, sleep, sleep" until the subject falls into a hypnotic state.

(III) *Limitation of voluntary movements* is also a condition of hypnosis. The subject sits down on a chair in a comfortable position and is asked to be as motionless as possible. The subject is directed to abstain from all sorts of movements, not to move his limbs, not even to wink if possible; in fact, not even to attempt the slightest motion of the limbs, not even to think of a change of position. Muscular activity must remain completely relaxed.

(IV) *Limitation of the field of consciousness* must be brought about in order to induce hypnosis. The consciousness of the subject should be narrowed to one idea of sleep. Wundt defines the very nature of hypnosis as limitation of the field of consciousness; and to a certain extent he is justified in his assertion. We know that a strong emotion narrows down the field of consciousness. We often find that people under intense excitement lose their senses, so to say; their mind seems to be paralyzed, or rather to say the one idea accompanied by the intense emotion banishes all other ideas and a state of *monoideism* is thus effected. People are often run over by carriages, automobiles, on account of sudden great fright. The one idea of danger, the emotion of fright, reverberates in the mind like a sudden powerful clap of thunder, confusing and stunning all other ideas and emotions. The mind is brought into a contracted cataleptic state, the field of consciousness is narrowed down to one idea, to one emotion, to a single point. This mode of hypnotization in which this particular condition is specially emphasized is successful with people of an intensely emotional nature, but who are not introspective in character.

(V) *Inhibition* is another important condition in the induction of the hypnotic state. The subject must inhibit all ideas, all images, all emotions that may arise in his mind. The subject must think only of the brilliant point, of the tips of the hypnotizer's fingers, of the passes, of the idea of falling asleep. The subject must be able to inhibit all movements, all tendencies to action, all desires and cravings.

All such conditions bring about that particular state of abnormal suggestibility known as the hypnotic state. Hypnotization produces a deep cleft in the mind of the subject, a cleft by which the waking, controlling consciousness becomes separated from the great stream of conscious life-activity. That is why we have the strange accounts of hypnotic subjects, especially of those who were on the verge of somnambulism, that during hypnosis they were indifferent to the actions of their body, the latter acted by itself; that they were mere spectators of all the experiments performed on them; that it seemed to them that "they themselves," their personality, retreated far, far away. The hypnotic state is specially characterized by the fact that *associations* and *dissociations* of muscular, sensory, glandular, neural, ideational, emotional and will activities can be brought about.

Hypnotic trance is again characterized by the extent of memories which may be widened or contracted. Motor, sensory, glandular, ideational, emotional, memory-changes may be effected, and transformations of personality may be brought about.

We must however emphasize the fact which is too often forgotten that all such changes are really and ultimately dependent on the changes produced by sugges-

tion in the ideas and beliefs of the subject, all the other changes are produced indirectly. The modification is essentially central, ideational, and emotional.

The emotion of belief is specially affected. The hypnotized subject is a person in whom faith can be stirred to its very depths. The will is affected. The subject must be of an obedient temperament. The waking, controlling, critical consciousness is practically suspended in the hypnotic state. As I expressed it in another place: "Hypnosis with its allied states can modify, undermine, create belief, and important modifications may be brought about in the total mass of representative life activity."

When the patient sinks into a deeper and deeper hypnotic condition, when the state is so profound as to verge on somnambulism, the waking, controlling consciousness hangs on a thread, so to say, to the rest of organic life; and when that thread too is cut off by suggestion, the waking guiding consciousness loses all contact with the stream of life.

Some writers attempt to explain hypnosis by the fanciful theory that the hypnotic state is due to the awakening of so-called "complexes" or mental experiences of childhood. Where the maternal complexes predominate there the tendency is hypnotization by patting, petting, quieting and so on, while where the complexes of the more stern father predominate there the tendency is present to hypnotization by command and authority.

This theory assumes suggestibility as a basal fact, but refers it back to infancy. To push back or "repress" an unexplainable fact into infancy is not to explain the fact. What sort of experiences in childhood gives rise to suggestibility? Is suggestibility an acquired state

or is it a condition fundamentally characteristic of human nature? Psychological studies go to confirm the fact that suggestibility is a fundamental trait of human nature as much as is association of ideas. All that we can say is that certain experiences predispose to certain lines of suggestions, but suggestibility itself is a fundamental characteristic of man, both in his individual and social capacity, whether infant, child, adult, man, or woman.

Once, however, we assume suggestibility the whole parental theory is useless, there is no need of dragging in father and mother in order to fit them on Procrustes' bed of some fad theory. The facts of hypnosis can be far better explained by the fundamental fact of suggestibility which under conditions of removal of the critical, controlling consciousness stands revealed as the essential characteristic of the subconscious. Alcoholic drinks, various drugs, intense emotions, and even a blow on the head may do the same thing.

Moreover, the adherents of the theory show little acquaintance with the most elementary facts of hypnosis. The sensori-motor manifestations such as catalepsy, rigidity, of which the patient or subject is not capable in his waking state, the increase of motor activity in certain directions which the subject is unable to perform in his waking state, the anaesthesias and hyperaesthesias which the subject cannot manifest in his normal condition, the hallucinations, the transformations of personality, the extreme mimicry which the hypnotic somnambulist manifests, a condition of which he is absolutely incapable in his waking condition, the amnesias characteristic of deep hypnosis, the post-hypnotic suggestions that can be delayed for many days, weeks, and months, the

presence of dissociated states which subconsciously keep the suggestions, states that can be manifested as hypnoid or co-conscious states of which the subject remains unaware, all these phenomena and a host of others are completely ignored by the paternal, sexual, or incest theory.

They who have studied closely the phenomena of hypnosis cannot help coming to the conclusion that hypnosis is a state of dissociation brought about under special psychological and physiological conditions, such as concentration of attention, monotony of stimulation, inhibition of psychomotor activities. In this respect most of the students in normal and abnormal psychology, though they may differ widely in other respects, agree that the hypnotic state is an inhibition of the upper consciousness, or the inhibition of "the organ of apperception" as Wundt puts the same view. Recently other writers came to a similar conclusion. Hypnosis is a cerebral dissociation brought about by the factors of concentration of attention and monotony of stimulation.

The hypnotic state is a state of increased suggestibility, it is a reflex consciousness. A changed physiological state must be assumed in hypnosis. This change consists in the disaggregation of the superior from the inferior centres, in the segregation of the controlling consciousness from the reflex consciousness. Strong persistent impressions or suggestions made directly on the reflex consciousness of the inferior centres may modify their functional disposition, produce sensory, motor, and glandular changes and thus affect trophic functions. Disaggregation, dissociation is what specially characterizes the hypnotic state.

In the hypnotic state the subconscious is laid bare

to the influence of the external environment. We get access through the subconscious to man's sensory, motor, and glandular activities, affecting his ideas, feelings and emotions. We can thus produce profound changes in man's life. The hypnotic consciousness is a reflex consciousness, unprotected by the reasoning, critical, controlling consciousness. Once the subconscious is freed from the controlling, guardian consciousness, profound modifications may be effected in man's mental constitution.

From a practical therapeutic standpoint hypnosis is of the utmost importance. Whenever it is possible the hypnotic state should be used for the alleviation of nervous and mental suffering. Not to avail oneself of hypnosis in the treatment of mental troubles and claim the omnipotence of some other method as a panacea for mental affections is to show undue enthusiasm not justified by experience. Many psychopathic cases have been treated by me and cured *permanently* by means of hypnosis alone. Some of the cases were of severe character, and the employment of other states and methods would have required months, if not years of treatment with possibly no chance of recovery, on account of the dragging character of the treatment. Treated by hypnosis the patients became permanently well after a few treatments.

Some severe cases that went into a deep state benefited after the very first treatment, and became permanently cured after three or four treatments. This can hardly be affirmed of any method no matter how enthusiastic one may be about it. Whenever therefore it is possible to obtain a deep hypnosis the latter should by all means be used. Hypnosis is a powerful instru-

ment in the armamentarium of Psychotherapy and the medical man who wishes to get successful results should cultivate its use.

It is greatly to be deplored that the use of hypnosis is abandoned by some medical enthusiasts for some new theory and is regarded with neglect and even with scorn. It is acting too deliberately in the interest of some hobby, to cut oneself from the use of one of the most powerful weapons of controlling the aberrations of the subconscious, the source of psychopathic maladies.

The hypnotic state is of no less importance from the standpoint of psychognosis, that is, from the standpoint of the finding out the patient's condition, learning the history of the case and following the evolution of the mental malady from its earliest beginnings. We can trace the various symptoms of the disease down to the very roots of early childhood and watch the stages of the development of the malady, since in some interesting and instructive cases the patient can be actually made to live over the experiences that have gradually developed the present morbid condition. The most difficult, the most inaccessible recesses of the subconscious life can be searched in the hypnotic state.

It is foolhardiness and mental blindness on the part of the physician to deprive himself of such an efficient instrument of research. It is to play into the hands of various superstitions and prejudices of the vulgar and the Christian Science sectarians, as well as of other would be "scientists" who claim that the hypnotic state causes infinite harm to the human soul. As far as I am concerned, and I may possibly say it also for some of my colleagues who have devoted years to the study of hypnotic state and its effects, hypnosis is one of the greatest

discoveries made in the domain of Psychopathology. It is much to be regretted that medical men who devote their life to Psychopathology should disparage the use of hypnosis for psychognostic purposes. Hypnosis yields us one of the most powerful searchlights for the psychognosis of the subconscious.

At the same time we must point out an important fact often overlooked by investigators of hypnosis. The hypnotic consciousness is reflex in character. This led to the misunderstanding that the time element of the actions such as simple reaction time or association and choice time must necessarily be shortened. This, however, is not correct, the act or the idea suggested may be carried out, although the time which they take may even be lengthened.

Some investigators have shown that reaction time is increased in hypnosis, while others come to the conclusion that reaction time is decreased. As a matter of fact in some subjects there may be a lengthening and in others there may be a shortening of the reaction. The results are by no means contradictory. We must bear in mind the fact that we deal here with a state of high suggestibility. While certain suggestions meet with no resistance others meet with increased resistance, due to the same factor of suggestibility. Such in reality we find the facts to be. Some subjects show a marked increase of reaction time, some show a decrease, and some show almost no variation.

They who have had long experience with hypnosis expect no other results. It would have been far more difficult to understand the hypnotic states had there been a uniform lengthening or shortening of reaction time in hypnosis. The thresholds of the mental systems of the

hypnotic consciousness are not uniformly reduced, but, they vary in different directions, some fall, others rise, while again other systems remain unchanged.

The heightening of thresholds of many systems in hypnosis is brought as an argument against the employment of the hypnotic state for psychognostic and psychotherapeutic purposes. This however should not be in the way of the experienced physician. A physician who finds difficulty in overcoming the rise of thresholds and the increase of resistance should give up his practice. As a matter of fact there is always a way of lowering the thresholds of mental systems in the hypnotic state.

CHAPTER VIII

HYPNOID STATES

HYPNOID states consist of the presence of two or more fully independent complex mental systems. Such states are found in the phenomena of automatic writing, shell hearing, crystal gazing in the various forms of coexistent double and multiple personalities and various other subconscious conditions.*

In automatic writing the patient is in his usual state. He may be carrying on a conversation with some one, while at the same time, his hand in which a pencil is placed, begins and continues writing sentences, descriptions or entire essays and chapters in a well formulated and lucid manner, the subject's upper or principal consciousness knowing absolutely nothing of what the hand had written.

During the time of the automatic writing the hand is anaesthetic, but only in relation to the patient's upper consciousness. There is a well organized system of consciousness controlling the automatic writing, since the hand itself may register responses to questions not understood and sometimes not even heard by the subject. Likewise, if the hand is pricked, although the subject himself does not feel the prick, the hand will nevertheless make marks to indicate the number of pricks. Im-

*The various forms of double multiple personality have been described in *"Multiple Personality."* See Dr. Morton Prince's *"The Dissociation of a Personality."*

mediately after the automatic writing ceases sensibility returns to the anaesthetic hand.

All stages and forms of automatic writing are observed from mere scratches to highly complicated discourses. In fully developed cases the handwriting is of a spasmodic character, as though executed with single rapid strokes.

Hypnoid or coexistent functioning, though disaggregated states, may be cultivated with some success by normal healthy individuals. In some the dissociation is complete, in others it is but partial and the subject is conscious of what is going on, but he feels that he has no control over the writing nor is it his consciousness that has formulated the writing.

Instead of writing there may be automatic speaking. The phenomena are known under the name of speaking with tongues. The speaking may range as in the case of automatic writing from the simplest to the most complex, from the automatic volubility of meaningless syllables appearing as a new tongue or language, to a connected recital of intelligible phrases.

The phenomena of crystal gazing belong to the same category and may be classed with hypnoid states. The vision, the hallucinatory experience appears to rise from the subconscious and seems to develop independently of the subject's consciousness. The subject takes cognizance of what is presented to him by the dissociated mental state which develops on the basis of some peripheral sensory experience.

It is possible to bring forth subconscious experiences by developing in the subject visual hallucinations. The subject looks into a reflecting shining surface, a crystal, a mirror, a glass of water. The subconscious self

brings out visual perceptions which appear as hallucinations to the upper self. The upper self sees the pictures projected by the subconscious self in the same way as the automatic writer reads the product of the automatic writing.

The subject may for example perform a certain action such as misplacing an article or reading something unconsciously of which there is no recollection. Now the gazing into the crystal may bring out these past experiences as visual hallucinations. Occasionally the subconscious self may so develop in the phenomena of automatic writing or crystal gazing that automatic actions may be manifested and the patient falls temporarily into a complete subconscious state.

We can also develop a form of auditory hallucination by bringing various experiences out of the subconscious. This can be accomplished by sounding or vibrating objects. The subject listens intently to the monotonous sounds, and experiences, lost to the subject's upper consciousness, but retained by the subconscious, which come in the form of auditory hallucinations.

In the many forms of psychopathic anaesthesia of considerable persistence and extent, hypnoid states may be developed; the anaesthetic hand for instance will react to various stimuli, handle different things, give intelligent answers in automatic writing to questions not directly heard by the patient. These phenomena can be brought out by various experimental procedures.

Most of the cases of functional derangement and mental dissociation, such as the various forms of functional psychosis or psychoneurosis fall under the category of hypnoid states. Various forms of sensory, mo-

tor, gastric, emotional, and other disturbances, when of a functional psychopathic character are often due to subconscious systems dissociated from the patient's consciousness and manifesting their activity in the upper waking life.

The patient is aware of the distressing results, but has no suspicion of the active subconscious processes that give rise to such manifestations. The dissociated system forms a center of activity that falls outside the domain of the patient's upper consciousness, the results alone appearing in the patient's waking life.

Hypnoid states are co-existent, "co-conscious" states and may develop into co-existent, "co-conscious" personalities.

CHAPTER IX

THE HYPNOIDIC STATE

THE hypnoidic state is the formation of a *quasi*-personality with a more or less definite character, a personality that is inaccessible to direct suggestion. The hypnoidic state, however, is amenable to indirect suggestion. By means of indirect suggestion it is even possible entirely to remove this hypnoidic personality, and have it replaced by another which may soon vanish to give room to another personality widely different in character and memories. Hypnoidic personalities rise like bubbles from the subconscious and vanish. They may however become well organized, stable and permanent.

Hypnoidic states consist in the *recurrence* of outlived phases of the patient's personal life. The hypnoidic state forms a *quasi*-individuality, the upper consciousness of the patient being removed. Memories which the upper self is unable to recall and which seem to be altogether effaced suddenly rise to the surface of consciousness as the upper layers of mental activity are removed.

In hypnosis the removal of the waking consciousness is followed by a state of high reflex suggestibility, which is characteristic of the indefinite nature of the secondary self. In the hypnoidic state such suggestibility is absent, because another *quasi*-personality emerges having a more or less definite character, a personality which is not amenable to direct suggestion. By

means of indirect suggestion it is possible to remove this personality and replace it by another which may again be treated in the same way.

Hypnoid states present phenomena of two or of more *co-existent,* dissociated, *co-conscious* mental systems; *hypnoidic* states present phenomena of *mental alternation.* Instead of the *simultaneity* of two or more independent functioning systems of the hypnoid states, we find in the hypnoidic states *alternation* of two or more independently functioning systems. When one is present the other is absent or is dormant subconsciously.

The interrelation of the alternating states may be of such a character that they may be completely unknown to one another; or they may be known to one, but not to the other. Thus the first series of states may not know the second series, nor the second the first; or while the first series does not know of the second, the second series does know the first. In the first case the dissociation is complete, in the second case, the dissociation is fully present in the primary series, but not in the secondary.

Suppose, for the sake of illustration, consciousness consists of moments A, B, C, D, E, etc., then in the case where the states are unknown, the primary series consists say of A, B, while the secondary series consists of C, D, E, F, both series are independent and dissociated and as such are unknown to each other. In the case, however, where the secondary knows the primary, but not the reverse, then the secondary consists of all the functioning moments while the primary consists only of A, B, and as such it does not know the rest of the moments C, D, E, F, etc.

The secondary states may be wide and extensive

enough as to include the primary states, or they may be narrow as to exclude them. In the former case the secondary states may be regarded as more or less complete states, while the primary states are the incomplete ones. Frequently, however, both primary and secondary states are incomplete, and while they may have in common many of the lower automatic and secondary reflex psychic activities, they lack common elements of conscious memory, and hence there is no recollection of one series by the other.

The whole series of primary states represents a flowing synthetic organic unity with recognition and recollection of all the primary states; while all the secondary states form another independent, but also an organic unity having recognition and memory for all the secondary states that enter into the flowing unit. In other words, two personalities are formed which to all intents and purposes may be regarded as independent of each other and having two separate centres of synthesis giving rise to the cyclical phenomena known as a double consciousness.

If the cycle appears but once, we have *monocyclical bimorphosis,* if the cycle is repeated, the condition is *polycyclical bimorphosis.*

There is, however, no reason why the separate series should be limited to two, although this is the most common occurrence. There may be many separate series, with as many independent foci of synthesis giving rise to as many different individualities. In such a case we have the phenomena of multiple consciousness or of multiple personality, in short, the phenomena of *polymorphosis.* If the cycle occurs but once, then the polymorphosis may be said to be *monocyclical,* if the cycle

is repeated the *polymorphosis* is *polycyclical.*

The formed personalities in polymorphosis act as independent individual beings and enter into relations, conversations, and discussions, the whole presenting a dramatic play in which many personages take active part, successively as well as simultaneously. Such, for instance, are those functional cases of multiple personality, reported by many writers, cases which to a certain extent may be reproduced artificially. These many personalities may fuse and form a new personality with all the contents of memory belonging to them, and as such, may have recognition of all of them, or may entirely lack all recognition of them.

The hypnoidic states may develop into distinct individualities which may become sharply defined in character with strong claims of independent personalities. They are jealous of their independence and strenuously resist attempts at fusion. The *quasi*-personality formed puts forth claims of being an independent individual, not even related to the patient's personality of which it is really a constituent. In such cases we usually find one or two predominating personalities which present a high degree of stability and individuality, while the rest are unstable, they come and go and get character and individuality by insistent questioning and indirect suggestions given to them by outside people and their surroundings.

There is no doubt that the very interplay of the principal dominating personalities as well as of the subordinate ones is in itself an important factor in the strengthening of the various crystallized individualities, which at first may come into being in a rather amorphous condition. The interrelation of these different *quasi*-indi-

vidualities, though seemingly so insistently and aggressively independent, is really a very intimate one, they are all chips of the same block.

A hypnoidic state or fully developed independent personality may be formed of the whole or part of the content of the principal personality, but it does not recognize the source from which the content is really derived. The personalities, however, may become so far dissociated as to possess even different contents so that one cannot reproduce that of another; they are in short, crystallized and organized of different elements, and go to form different individualized moments-consciousness, which as far as time relationship is concerned may stand in relation of co-existence, or succession, or even both.

The character of the hypnoidic individuality is often some outlived phase of the patient's personal life. Such states may also be induced in hypnosis, but then the artificially produced hypnoidic state is vague and ill defined. More frequently the hypnoidic state may be fully brought about in post-hypnotic states. I could effect an analogous state in my somnambulic subjects by post-hypnotic suggestion. The difference between the post-hypnotic and the true spontaneous hypnoidic state consists in the relation of the subject to external impressions. In the post-hypnotic state the subject receives external impressions directly and refers them to some external source. He hears, sees, feels, perceives things that happen around him, and frequently carries on animated conversations on different topics. Even in the case of post-hypnotic negative hallucinations, the patient is still fully alive to other not inhibited sense impressions that reach him from

all sides.

Quite different is the true hypnoidic state. The sense-organs of the patient are closed to the impressions of external stimuli. He does not perceive anything that takes place around him. His environment is that of the past, and in it he lives and moves. Shut up within one of his past lives, he remains insensible to the world of his objective present.

If by chance any impressions do reach the subject, they are at once worked into his present hallucinatory life experience. If the patient is touched, squeezed, pricked, he feels nothing at all; he is totally anaesthetic and analgesic, and still within his "vision" he may be extremely sensitive to pain, shiver from cold, complain of fatigue, and undergo tortures of pricking sensations caused by a strong gale blowing icicles into his face. Of such a nature were the visions in the case of Hanna.

The patient hears none of the conversation carried on in his presence. When the patient is spoken to on subjects not directly related to his resurrected life-experience, he makes no reply; he simply does not hear. Only when he is addressed on something relating to the experience he is passing through, it is only then that he makes a reply. He does not realize, however, that it is some one else whe speaks to him; his replies to questions are to him either answers to his own thoughts or sometimes—a case very rare—he seems to converse with some imaginary person within his hypnoidic state.

No direct suggestions are taken by the hypnoidic personality. The personality is fully rational in relation to the environment in which it lives. Thus, in one of his hypnoidic states Rev. Thomas C. Hanna lived through a terrible accident that happened to him once.

He was on Mount Jewett, Pa. The wind blew high. Lightning rent the sky, thunder crashed overhead. The gale gained strength and became a tempest. Broken branches and trees were falling on all sides. "There is an old woman with a child!" he exclaimed. "Oh, it is terrible! it is terrible!" he moaned. "We must run! we must run! I must drag the woman. Thunder! It is terrible! Save the woman. I am so cold! My heart is so weak! Oh, it is terrible! We must run! we must run!"

To my question whether he knew Miss C. the answer of the hypnoidic personality was highly interesting and instructive. "Don't know her yet—acquainted with her a year later. From Mount Jewett to her is a year." (This was found to be correct). When I suggested to him that his friend S. was with him, he laughed me to scorn. "That is impossible!" he exclaimed; "S. is many miles away from here." I asked for the date. He gave the date in which the event took place. "It is August now," he said. When I insisted that it was May (the actual time when the vision occurred), the hypnoidic personality became impatient, raised its hand, struck the bed with great force, and exclaimed: "I am sure it is now August. You can not make me crazy!"

All that time the patient was sitting up in his bed, with his eyes firmly shut, blind and deaf to all impressions that had no relation to the "vision." By indirect leading questions this particular personality gradually dwindled away, and lo! a new personality appeared on the scene—a boy-personality.

The Rev. Thomas C. Hanna became a boy of thirteen. The scenery changed completely. He was on

Umbrella Island. It was sunset, it was "beautiful." He was expected for supper, but he was on the water, rowing and fishing.

On awakening from his hypnoidic state, the patient remembered the "vision" very clearly; he could reproduce it, as if it were indelibly impressed on his mind. He could not recognize the experiences of his vision as events that had taken place in his past life; he did not know that I or any one else conversed with him and led him to give answers; nor did he remember any of the many statements to my indirect questioning he had made in his hypnoidic state. He could not remember the answers he gave me to the suggestion that his friend S. was with him; he did not know anything of the quarrel we had about the date; nor did he remember anything of the interesting information he gave me about the events of his life such as the date of his acquaintance with Miss C. He could only remember and that with extraordinary clearness and distinctness everything that directly related to the "vision" itself.

Similarly in other cases, such as that of R., M. and F. states closely analogous were studied by me. They all manifested alternating, unstable personalities of a hypnoidic type.

When left to itself the hypnoidic personality tends to disappear, to fall back into the undifferentiated mass of consciousness of the subconscious self; for the hypnoidic personality is unstable in its nature. Unstable, however, as the hypnoidic personality is, it is in closer contact with the subconscious life than is the waking self. The hypnoidic personality is in possession of facts, experiences, memories, of which the upper, central consciousness is ignorant.

The following table gives the essential characteristics of the various states:

(I) HYPNOIDAL STATES.	(II) HYPNOIDIC STATES.	(III) HYPNOID STATES.
1. They can be artificially induced by the method of hypnoidization.	1. Hypnoidic states are rarely artificially induced; they are usually spontaneous.	1. They can be artificially induced in trance states or may arise spontaneously.
2. The upper consciousness takes direct cognizance of the hypnoidal states in the moment of their appearance. A prolongation of them tends to the disappearance of the waking consciousness.	2. Hypnoidic states are not directly cognized by the upper consciousness; the latter is always absent when the hypnoidic states are present.	2. Hypnoid states may or may not be cognizant by what we call the normal consciousness. These states are always *co-conscious*, and are usually present alongside the upper normal consciousness of which they are independent.
3. The experience of hypnoidal states is vague, shadowy and fluctuating.	3. The experience of the hypnoidic state is very vivid.	3. The experiences are usually vivid.
4. Hypnoidal states possess mere bits, chips of past experiences.	4. Hypnoidic states form complete systems of experiences, whole personalities.	4. Hypnoid states may be parts of former mental states, but soon tend to independent mental content.
5. Hypnoidal states are normal, vestiges of a primitive rest-state.	5. Hypnoidic states are hallucinatory, dominant, subconsciously formed personalities of the alternating type.	5. Hypnoid states are often hallucinatory, and when fully developed become parasitic *subconscious or co-conscious* personalities.

Hypnoidic states are of a nature entirely different from the hypnoid and hypnoidal states which are

fragmentary, sudden intrusions of isolated subconscious moments consciousness into the upper regions of the waking personality, and can be induced by post-hypnotic suggestion, as well as by methods of hypnoidization. Like the hypnoid and hypnoidal, the hypnoidic states have as their nuclei, past, long outlived experiences, but, unlike the hypnoid and hypnoidal states, they are not fragmentary, dissociated, mental dust. The hypnoidic states are systematized, hallucinatory, resurrected, subconscious personalities.

In all states, hypnoid, hypnoidic and hypnoidal, we find, however, one common trait, and that is the emergence of memories or of mental systems that may be known and recalled, whether directly or indirectly, by the primary self.

CHAPTER X

HYPNOLEPSY

IN cases of double and multiple personality of the alternating type a state of hypnolepsy is present. In all cases of mental alternation one state does not directly merge into the other. Between the two there is a state of unconsciousness or of deep sleep, however short it may be. The two alternating functioning systems are separated by an interval of apparent unconsciousness or of deep sleep. At first the interval is long, extending over a period of many minutes, or even hours, but gradually, with the repetition of the alternation, this interval becomes shorter and shorter, and is finally reduced to but a few seconds.

In the first cycles of double and multiple personality none of the personalities are well organized; each of the leading personalities can maintain itself above the threshold of self-consciousness for but a short time only. With the disintegration of the latter another personality begins to rise, reaches the threshold of self-consciousness and begins to function; the personality not being well organized the process of formation and rise requires a considerable time. As the cycles of alternation are more and more repeated the alternating personalities become well organized and the time between the submergence of one and the emergence of the other becomes considerably reduced. Still the process must occupy some fraction of time, however short. Hence the intermediary state of deep sleep, the state of unconsciousness. In

passing from one state to the other the deep sleep must be present. This is the *hypnoleptic state.*

I must add that *the hypnoleptic state is, as a rule, not found in artificially produced hypnoidic states.* No gap, no state of unconsciousness separates hypnoidic or coexistent personalities cultivated by a long series of experimental suggestion. We may say that hypnolepsy is pathognomonic of actual, spontaneous hypnoidic states.

The hypnoleptic state is a true attack. It sets in with a state of irresistible drowsiness, the patient still having consciousness of his environment. Stimuli which must become more and more intense as the state of drowsiness deepens, reach the subsiding, disintegrating personality and revive it, bringing it again into momentary activity. The patient can be aroused for a brief space of time, for a second or a fraction of it, and soon falls back into a drowsy condition. As the drowsiness deepens the patient's reactions to external stimulations become gradually weaker. Finally a point is reached beyond which no stimuli, however intense, can possibly arouse the patient—he is in an unconscious state. The hypnoleptic state can therefore be divided into two stages. One may be characterized as the first stage or the stage of drowsiness. The state that follows is the second stage, the stage of unconsciousness.

The state of drowsiness or the first of the hypnoleptic state is of the utmost importance for theoretical, experimental as well as for practical therapeutic purposes. It is in this stage that the true crisis of alternation begins. One personality is slowly subsiding while another personality is being formed and is slowly rising to its dominant position in consciousness.

The hypnoleptic state was well manifested in the

Hanna, case, a true case of multiple personality, not brought about by suggestion or by hypnosis. To quote from the account:

"Mr. Hanna was now overcome by an uncontrollable desire to sleep. His eyelids began to close. He was urged to keep them open, but each time they began to drop in spite of his efforts. Attempts were made to arouse him by various stimulations. His limbs were moved violently, cold water was dashed in his face; he was pinched and otherwise stimulated. The onset of the somnolent state was irresistible. The lids finally closed; he could not open them. He fell into a state of unconsciouness.

Every effort to keep him awake was futile. Even the mechanical opening of his lids did not bring any response; he remained immovable. This is the hypnoleptic state. In this hypnoleptic state Mr. Hanna was physically prostrated. He was like one dazed by a hard blow, who lapsed into unconsciousness. His muscular system was passive. The conjunctival reflex was absent. There was general anaesthesia to all forms of sensations."

The hypnoleptic state is an attack of sudden onset. It may be divided, as we have pointed out, into two periods. The first is that of a rapidly increasing condition of extreme fatigue and an overwhelming feeling of drowsiness, culminating in a second period, that of unconsciousness. The state of hypnolepsy is observed in all true cases of double and multiple personality. The law of monocyclical or polycyclical bimorphosis and polymorphosis is: *All mental alternations have an intermediate state of drowsiness and unconsciousness, a state of hypnolepsy.*

The state of hypnolepsy occurs in the transition from the primary to the secondary, or newly formed personality. The transition from the secondary to the primary personality occurs in ordinary sleep. The order of the cycle is: *primary state, hypnolepsy, secondary state, sleep; primary, hypnolepsy, secondary state, sleep; primary, and so on.* In other words the passage from the secondary to the primary is through the ordinary sleep-state, no unconsciousness being present, while the transition from the primary to the secondary is through drowsiness and unconsciousness, through the state of hypnolepsy.

The transition from the primary to the secondary comes on like a sudden attack. The patient may be lively, in excellent spirits, he suddenly becomes drowsy and lapses rapidly into a state of unconsciousness. When he comes to he is in the secondary state. Nothing of the kind is observed in the transition from the secondary to the primary state. If the patient could be kept from going to sleep, he could be kept indefinitely in the secondary state. This, however, is not the case with the primary state. The primary state is more unstable, after a few hours the hypnoleptic attack comes on with a consequent transformation of personality.

Why is it that while the transition from the secondary to the primary state is through the condition of ordinary sleep, taking place usually at night, the contrary is the case in the transition from the primary to the secondary? In other words, why should the transition between the primary and the secondary state take place through an "attack," through a hypnoleptic state? The answer is, because the sleeping state represents the absence of any dominant moment of self-consciousness,

the absence of any personality. That is just what takes place in the interval of alternating states. But what is the hypnoleptic state? *The hypnoleptic state is the reproduction of the original attack which brought about the state of double or multiple personality.*

This was clearly revealed in the Hanna case. What happened in that case was that the patient met with an accident, lost his consciousness, his personality became disintegrated and could not be reinstated; a new personality with new content entered into being; a secondary state, a secondary personality became gradually formed and trained. The original order then was: (I) the primary state, representing the patient's whole previous life; (II) the state of unconsciousness due to the accident; (III) the formed and trained secondary state or secondary personality. The succession of the states formed a cycle of the original series, a cycle that went on repeating itself by association of contiguity in the same order. It is the law of recurrence which dominates all life.

We can now understand why the hypnoleptic state is of the nature of an attack. *Hypnolepsy is a reproduced attack.* We can also understand why the order invariably follows a uniform course: *primary state, hypnolepsy, secondary state,* never the reverse. *Such is the original order of events* which recurs like the rising and setting of the sun.

The phenomena of double and multiple personality have a definite course of their own. Newly formed personalities pass through well defined cycles, and like new worlds formed by some external or internal catastrophe, they keep on revolving within the same orbits, they follow the same order as the phases of the moon.

The order is persistent, reflex, automatic, and recurrent. Further on in reviewing psychopathic states we shall bring out this important recurrent aspect of all subconscious states.

PART II

PSYCHOPATHIC DISEASES

CHAPTER XI

THE CLASSIFICATION OF NERVOUS AND MENTAL DISEASES

IN reviewing the different forms of nervous and mental diseases we may classify them into organic and functional. By organic affections we mean pathological modifications of the nerve-cell and its processes taking place in the very structure of the cell. The modifications are of a degenerative character, ending in the death of the neuron. Under this category come such diseases as general paresis, dementia præcox, and mental affections of a degenerative structural character. Such diseases may be termed *organopathies* or *necropathies.* The functional affections may in turn be divided into *neuropathies* and *psychopathies.*

There are mental maladies in which the neuron undergoes degenerative changes which at first bring about an apparent increase and then a suspension of function not necessarily terminating in the destruction of the neuron. The neuron recovers either temporarily or permanently. Such affections are produced by poisons, alcohol, morphine, chloral hydrate, cannabis indica, and other toxic agencies. To this category also belong all mental affections caused by toxic products formed in the organism and slowly and imperfectly eliminated from the body. Here belong all the temporary maniacal, melancholic, and delusional states, such as puerperal mania, epileptic insanity, the insanity of the adolescent and climacteric periods, as well as that of *folie circulaire,*

periodic insanity, alternating insanity, and, in general, all the mental states known at present under the description of manic-depressive insanity. All such neuron affections may be termed *neuropathies*.

Where the affection depends not so much on the neuron itself, but on the *association* of neurons, the disease may be described as a *psychopathy*. In this form of mental affection the neuron itself may remain healthy, the trouble being due to associations with systems of neurons which are usually not called into action by the function of that particular neuron or system of neurons. Such conditions are well known in physiology. Thus in the experiments of Pavlow and his school the flow of saliva in the dog could be brought about by association with a blue light or with a whistle or with the ring of a bell.

What holds true in the case of saliva holds true, for instance, in the case of nausea and vomiting. Stimuli which are ordinarily indifferent may, by association, bring about such conditions. The fault does not lie here in the stimulus, or in the sensation, or in perception, but in the association with reactions of neuron systems with which that stimulus and its percept have become associated. In other words, the fault is of a purely *associative* character.

Ordinarily only food or gustatory sensations and perceptions of food can call out the flow of saliva or induce nausea and vomiting. Colored light cannot do it. Under special condition of association, however, colored light may call forth the reactions of flow of saliva or of nausea and vomiting, instance the experiments carried on by Pavlow and his pupils.

Emotions are specially subject to such associations of

what may be regarded as morbid or pathological in character. Emotions with their physiological effects may be linked by the process of association with any ideas, percepts, and sensations. Sometimes the physiological effects of emotions, or in fact any physiological effects, may be linked by special associative processes with ideas, percepts, and sensations which ordinarily are either indifferent in character to give rise to reactions and physiological effects of a different and even opposite type. Milk may excite nausea, a rose induce disgust, while the croak of a frog or the cawing of a crow may bring about ecstasy; Limburger cheese and overripened game may be enjoyed with intense delight. What association of sense and reaction made the Greeks regard the grasshopper as highly musical? The reactions of muscle and gland are like so many bells which by various connections and combinations may be made to ring from any sensory button.

An object, however harmless, may awaken intense fear while a dangerous object may be passed by with indifference. A man may be afraid of pointed sticks for instance and handle carelessly a revolver. The emotion of fear is associated with the one object, but is dissociated from the other. It is such associations and dissociations that give rise to the mental diseases of a psychopathic character.

This holds true not only of man, but also of the psychic life of the lower animals. My horse is not afraid of automobiles, regards with suspicion camels, and is somewhat startled at the sight of an elephant, yet passes them by; but he gets scared at a piece of paper. *Psychopathies, then, may be regarded as essentially pathological affections of associative life.* Mental diseases

may thus provisionally and roughly be classified into *organopathies, neuropathies,* and *psychopathies.*

If the psychomotor manifestations of the pathological process of neuron disaggregation and neuron degeneration be formed into a series, then the first stages of that series of that process constitute the phenomena of functional psychosis or of psychopathy. The stages are concomitant with the pathological conditions in which only the *associations,* the interrelations of neuron systems, are affected by dissociations;—the neurons, the dissociated aggregates, themselves remain unaffected.

The whole domain of the subconscious belongs to these stages of disaggregation in the course of the pathological process, *e. g.,* the phenomena of hypnosis, of somnambulism, of motor and sensory automatism, of the so-called hysterical sensori-motor disturbances of various organs, over the functions of which the personal consciousness is found on examination to have lost control by reason of neuron disaggregation and dissociation. Here belong the phenomena of double and multiple personality, the various phenomena of amnesia, the lost content of which can be revealed in the strata of subconscious life.

The domain of functional psychosis or of psychopathy also includes the phenomena of the different forms of so-called "psychic epilepsy." Here also belongs the great class of psychomotor derangements, such as phobias, impulsions, obsessions, fixed ideas, and allied states.

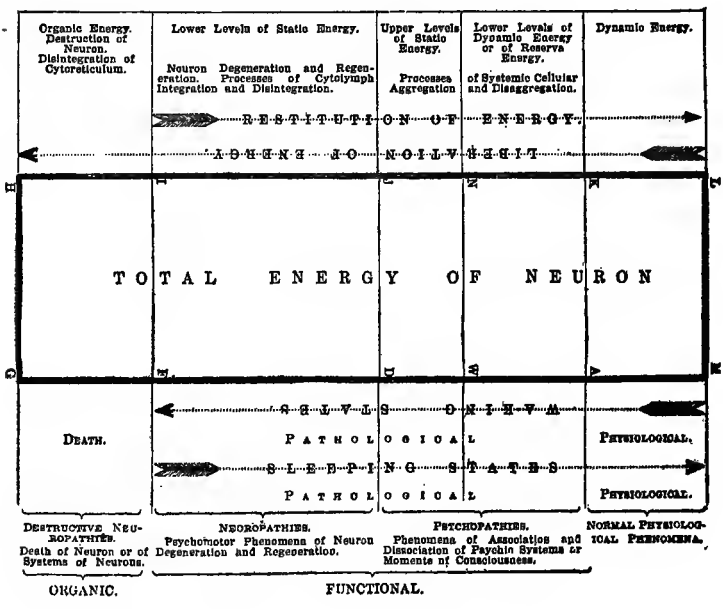
The phenomena of functional psychosis are coextensive with the whole domain of the subconscious. Functional psychic disturbances, or psychopathies are correlated not with organic, structural neuron degenera-

tion, but with disaggregation of functioning systems or of neuron aggregates. *The physiological cause is the rise of thresholds of the intercommunicating neuron systems.*

In psychopathic affections the function apparently lost and destroyed is found to be present in the subconscious,—the loss of function is only for the direct personal consciousness. The affection is only of a dissociative character. The activity of the affected system is itself sound; in fact, is often found to be exaggerated, —the system is only dissociated from other functioning systems.

The total energy of the neuron may be classified into *dynamic* energy, *reserve* energy, *static* energy, and *organic* energy.

NEURON ENERGY AND ITS PSYCHOMOTOR MANIFESTATIONS



The psychopathies, neuropathies, and organopathies or necropathies may be correlated with the flow and ebb of neuron energy, with the physiological and pathological processes that take place in the neuron in the course of its activity. This may be represented by the diagram on page 101.

By *dynamic energy* of the neuron is meant that part of energy which the neuron as an individual organism can dispose of in its relations to other neurons forming complex functioning organizations.

The dynamic energy is represented by the upper portion of the parallelogram A M L K.

By *reserve energy* is meant that surplus amount of dynamic energy which is kept in reserve and drawn upon by the organism under special conditions and emergencies.

Reserve energy is indicated by the diagram K N W A

By *static energy* is designated that portion of energy that is used only for the life maintenance of the neuron, both in relation to other neurons and to its own inner molecular constitution. Static energy cannot be drawn upon by the neuron in its functioning activity with other neurons without bringing about a state of disintegration.

Static energy is indicated by the diagram N W F I.

By *organic energy* is meant that energy contained in the very structure of the tissues of the neuron, not as yet decomposed into their inorganic constituents. This is indicated by diagram I F G H.

These phases of neuron energy are not different kinds of energy, in the sense of being distinct entities; they merely represent progressive phases or stages of the same process of neuron activity.

Liberation of neuron energy is correlative with *active* psychic and physical manifestations. Hence states of the nervous system corresponding to liberations of energy are designated as *waking states. Restitution* of expended energy or *arrest* of liberation of neuron energy goes hand in hand with *passive* conditions of the nervous system; hence states of restitution or arrest of energy are termed collectively *sleeping states.*

In the diagram this correlation is followed out in the direction of the arrows. The arrow, indicating successive levels of liberation of energy, corresponds to a similar arrow which indicates the course and progress of the waking states running parallel to the process of liberation of energy. The arrows at the top of the diagram illustrate the physiological and pathological processes at work in the cycles of expenditure and restitution of energy, while the bottom of the diagram indicates by its arrows the concomitant psychomotor manifestations—the waking and sleeping states.

The ascending arrow, indicating the process of restitution of energy, corresponds to the ascending arrow indicating the parallel psychomotor sleeping states. The descending arrows indicate physiological and pathological processes of liberation of energy, and also their concomitant psychomotor waking states.

"Ascending" and "descending" mean the rise and fall of the amount of neuron energy, taking the upper level of dynamic energy as the starting point. Briefly stated, *descent* means *liberation* of energy with its concomitant psychomotor waking states. *Ascent* means *restitution* of energy with its parallel sleeping states.

The cycles in dynamic energy correspond to the physiological manifestations of the nervous system in the

activity and rest of the individual in normal daily life. Concomitant with the expenditure of dynamic energy of the neurons, the individual passes through the active normal waking state, and, hand in hand with the restitution of this expended dynamic energy, he passes through the sleeping state of normal daily life.

When, however, in the expenditure of energy, the border line or margin, A K or N W, is crossed, dynamic and reserve energies are used up, and reserve and static energy are drawn upon. In crossing A K or N W the border line that separates the normal physiological from the abnormal or pathological psychomotor manifestations is stepped over.

"The thresholds of our psychological systems are usually raised, mental activity working in the course of its development and growth of associative processes under ever-increasing inhibitions with ever higher thresholds. . . . On account of the high thresholds and inhibitions, not the whole amount of the psychophysiological energy possessed by the system is manifested; in fact, but a very small portion is displayed in response to stimuli coming from the habitual environment. What becomes of the rest of the unused energy? *It is stored, reserve energy.*

"Biologically regarded, we can well see the importance of such stored or reserve energy. In the struggle for existence the organism whose energies are economically used and well guarded against waste will meet with better success in the process of survival of the fittest or will have better chances in the process of natural selection. The high thresholds and inhibitions will prevent hasty and harmful reactions, useless waste of energy, unnecessary fatigue, and states of helpless ex-

haustion. Moreover, natural selection will favor organisms with greater stores of reserve energy, which could be put forth under critical conditions of life. In fact, the higher the organization of the individual, the more varied and complex the external environment, the more valuable and even indispensable will such a store of reserve energy prove to be."

Static energy may be divided into two phases according to the nature of the process of liberation of neuron energy. As long as the process of liberation of energy effects only a *dissociation* of systems of neurons the correlative psychomotor manifestations fall under the category of *psychopathies.* If, however, the process of liberation affects the neuron itself, bringing about a *disintegration* of its constituent parts compatible with restitution, the correlative psychomotor manifestations fall under the category of *neuropathies.* This process of disintegration, equivalent to cell degeneration may end in death, in the dissolution of the neuron itself.

By *psychopathies,* then, is designated the pathological phenomena of *psychic disaggregation* correlative with the state or processes of dissociation within clusters or constellations of neurons, *the neuron itself remaining undamaged.*

By *neuropathies* is indicated a group of psychophysical manifestations running parallel to fluctuations of static energy and accompanied *by functional and organic changes in the neuron.*

By *organopathies* or *necropathies* is indicated a group of psychophysical manifestations running parallel with fluctuations of organic energies and accompanied by structural changes or by necrotic modifications resulting in the ultimate death of the neuron system.

The usual classification of mental functions is into: intellect, feeling, and will. By intellect is understood such functions as perception, conception, memory, abstraction, imagination and judgment. Under feeling are ranged sensations, pleasures, pains, moods, affective states and emotions. By will is meant all the functions leading towards action, our conations, desires, strivings, tendencies, and decisions. If we accept this psychological classification, we may accordingly classify mental diseases.

From our standpoint we need not go into the details of psychological classification. What we wish is to classify the nervous and mental derangements that fall into the domain of psychopathology.

We may take the physiological reflex arc as our basis of classification, namely the passage of a nerve current from a sense-organ through a sensory nerve to an intermediary central neuron or ganglion, and thence through a motor nerve to muscle; we can conveniently classify all psycho-physiological functions into sensory, intermediary or ideational, and motor. Biologically this classification is well justified inasmuch as by means of the sensory function the animal receives impressions from the external environment, elaborates them in the centre, and then reacts by motor adjustments and adaptations.

Psychopathic states are classified into sensory disturbances of sense organs and viscera, the various forms of anaesthesia; motor disturbances, and finally derangements of ideas, memory, will, and emotion. We give here a brief clinical description of various forms of psychopathic states in the ascending scale of their development, complexity, and organization, beginning with sense-disturbances known as the anaesthesias.

According to the symptoms we may divide psychopathic maladies into :

(I) Peripheral.

(II) Periphero-central.

(III) Central.

Under the peripheral may be classed the following:

(1) Sensory disturbances, the anæsthesias.

(2) Motor disturbances, derangements of motor adjustments and epileptoid attacks.

(3) Visceral disturbances, glandural affections, secretory, respiratory, cardiac, intestinal and sexual derangements.

Under periphero-central we may class:

(1) Illusions.

(2) Hallucinations, pseudo-hallucinations, the dream-hallucination, hypnotic hallucination, the aphasias.

Under central disturbances we may class:

(1) Delusions, the various forms of amnesia, aboulia, fixed ideas, morbid impulses, emotions, and morbid propensities.

We shall follow this order in our account of the various psychopathic maladies.

CHAPTER XII

SENSORY DISTURBANCES

BY anaesthesia is generally understood a loss of sensation in the epidermic layers of any of the sense organs, and specially a loss of sensation in the skin.

The anaesthesias may, with Janet, be classified as follows:

Anaesthesia:
- Local,
- Disseminated,
- Special,
- General,
- Total,
- Systematized.

Paraesthesia:
- Hypoaesthesia,
- Hyperaesthesia.

By local anaesthesia is meant a loss of sensitivity in some one part of the body. The usual stimuli applied to the affected part do not give rise to their appreciation in consciousness. One or more of the qualities of sensibility may be lost. The anaesthesia is frequently on the left side. It is sometimes confined to limited spots, sometimes to a part or to an entire extremity, or symmetrical portions of two extremities may be involved as in "glove and stocking" anaesthesia; it may again extend to one half of the entire body constituting *hemi-anaesthesia.*

The face may be involved, often on one side and along with it the eyes may be affected. Anaesthesia of one side of the face and appropriate side of the body may occur. When the eye is involved, not only the retina, but also the lids are anaesthetic. The eye muscles may also be affected.

Of all forms of sensation, pain and the tactile sense are most frequently lost. Muscular sense and articular sensibility are rarely affected. In severe cases the loss of sensibility includes the deeper parts and is more or less complete to all, even to intense stimuli, while in mild cases, strong continuous stimuli are felt. The anaesthesia may include parts of the mucous membranes. The abdominal viscera may be analgesic, strong compression giving rise to no pain.

Disseminated anaesthesia is like the local form, except that it is distributed over the body in patches. It may be in geometrical patches or in segments. The anaesthetic areas sometimes take the form of bands.

Special anaesthesia is a form in which the special senses are involved. Special anaesthesia may be either visual, auditory, gustatory, olfactory, or thermal. The most frequent form of special anaesthesia is that of limitation of the field of vision, usually of a concentric form. The loss of vision may be total, but this is a rare form. Visual acuity usually remains unaffected. There are not infrequently color disturbances, *achromatopsia* in which all colors are seen as grey.

Another far more common variety is that in which the reversal of the color field is present. In the normal eye the largest field is for white light,—blue, red and green come next in order, violet having the smallest field. The most frequent reversal in psychopathic vis-

ual anaesthesia is between red and blue, the red preceding the blue, and showing a larger field.

Psychopathic deafness is less common than the other forms of special sense anaesthesia. In most of the cases there is also anaesthesia of the external auditory meatus and of the outer surface of the drum. The deafness is rather for notes of high pitch. The tendency to involvement of the various special senses is according to the law of adaptation, reproduction or recurrence. The senses involved in the trauma show the recurrence of anaesthesia. The auditory is more essential than the visual in carrying on social relations, and is therefore less frequently affected. Taste, smell, and muscular sensibility, which are still more important in carrying on life activity are more rarely involved. In the form of special anaesthesia one or both sides may be involved.

In general anaesthesia all forms of sensibility of skin and mucous membrane are involved. This general anaesthesia may be localized, in patches, or in bands; it may cover the entire body or half of it. When the anaesthesia appears in the form of patches or as hemianaesthesia, touching or pricking two symmetrical parts, the one normal the other anaesthetic, presents interesting phenomena. The normal side may become red from the stimulus, while the anaesthetic part remains relatively unaffected.

Occasionally anomalies of sweat secretion, such as increase or decrease of perspiration, are present. There is no difference in temperature or circulation or general nutrition of the two sides. The anaesthetic part usually retains its reflexes. When the lower leg is involved the patellar reflex may be increased, but often it re-

mains unchanged.

The anaesthesia may be total, it may affect the entire body, involving also the mucous membranes. The anaesthesia may be for all qualities of skin sensation, such as touch, pressure, pain, heat and cold and may also involve completely or partially the special sense-organs. This form of anaesthesia is rare. In total anaesthesia the more frequent form is the loss of sensibility of skin and mucous membrane. The muscular sense is usually preserved, though in some cases it may be slightly diminished. In total anaesthesia the patellar reflex, the abdominal reflex, the secretory and vasomotor reflexes are present.

Systematized anaesthesia consists in the loss of sensibility in relation to definite systems of impressions, coming from certain external objects. That is, while the patient is anaesthetic to certain objects, he is not anaesthetic to other objects, though of the same nature. This form of anaesthesia may effect any of the senses, and is specially characteristic of the psychopathic state.

The tendency to dissociation or anaesthesia is in inverse ratio of its biological and social adaptations. Systematized anaesthesia becomes greater with emotional excitement and with increase of the intensity of attention. The pathological process here as in other psychopathies consists in a disaggregation of mental systems; it has its parallel in those forms of aphasia in which certain kinds of words only are forgotten, while others are retained.

Along with the anaesthetic or hypoaesthetic disturbances we sometimes find hyperaesthetic spots in which the sensitivity is abnormally great. On account of the

general process of disaggregation the touching, or pricking of certain spots gives rise only to indefinite feelings, the patient indistinctly or vaguely feels the stimulus.

In some patients with psychopathic disturbances, touching, pricking, or sending even a strong electric current through a limb, a hand for example, is only vaguely felt and localized. This phenomenon is known as *allochiria.* If the hypersensitiveness is very acute, the patient may localize the impression in a symmetrical place on the opposite extremity. This may be termed *complex allochiria.*

In psychopathic hyperalgesia, while the slightest touch may give rise to pain, often a firm pressure is not painful. The mucous membranes may be the seat of the hypersensibility giving rise to pain during swallowing, urination, defecation, etc.

Hyperaesthesia of the special sense-organs may occasion disturbances of vision, smell, hearing, or taste. A common form of psychopathic paraesthesia is that of a boring pain at the vertex of the skull, as though a dull instrument were being driven into the head. This form of pain is sometimes termed *clavus hystericus.* There may be hyperaesthesia or more commonly anaesthesia of the genital organs. The breasts may often be the seat of paraesthesia. In some cases the paraesthetic member feels to the patients, as if amputated or belonging to some other individual.

There may also be anaesthesia relating to hunger, thirst, and micturition. When there is anaesthesia relating to hunger and thirst, the patient may go on for some time without food, or take but little nourishment as the desire for food is diminished. When there

is anaesthesia of the bladder and urethra and also of the skin and muscles there may be incontinence of urine. The anaesthesia of the bladder may give rise to retention of the urine. Sensations of crawling, numbness, feeling as though snakes crawled beneath the skin are among the other forms of anaesthesia.

Disseminated or small islands of hyperaesthetic or paraesthetic spots are often found in psychopathic cases and may occur alongside of the anaesthetic ones. In psychopathic cases in which anaesthesia is present, there is almost invariably present some form of motor disturbance or paroxysm, occurring at irregular intervals. The anaesthesia always becomes more pronounced after the attack which may be considered as a form of hypnoleptic state.

There are often pains in different parts of the body, especially about the breast, ovaries, and spine. Pressure upon these spots may provoke a so-called hysterical attack or sometimes stop it. Such zones are termed hysterogenetic. Pains of psychopathic nature in the vagina or in the breast have sometimes led to diagnosis of organic disease and consequent operations. *It must always be remembered that psychopathic sensory disturbances are psychic in character, they are disturbances of the patient's subconscious life activity.*

CHAPTER XIII

MOTOR, VISCERAL, AND CIRCULATORY DISTURBANCES

IN this form of psychomotor disturbances a longer time is required to execute voluntary movements. This is shown by the fact that the reaction time is greater for the affected than the unaffected extremity, the difference may amount to one-fifth of a second. In the simple reaction time of the affected extremity it may rise to two seconds and sometimes, though rarely, to twenty seconds. Usually the affected extremity is hypoæsthetic or anaesthetic and the reaction time is more or less in proportion to the anaesthesia, or to the depth of the process of disaggregation. When voluntary movements are executed, they are carried out hesitatingly. This may be characterized as a kind of psychopathic ataxia.

The kinaesthetic memory of processes is present, while the kinaesthetic sensations are lost; that is, the central process of kinaesthesia is preserved, while the peripheral is lost. Hence we often find the following phenomenon, the patient with his eyes closed is told to raise his hand, he tries to do so. If now the hand is seized and held down, the patient still exerting force and endeavoring to raise it, finally believes that the hand is fully raised.

The voluntary movements become simplified or rather weakened in their range. Only simple movements can be executed, while the more complex are affected, the latter are carried out with effort, in a slow, uncertain way; simultaneous movements interfere with

each other. If, for example, the patient is asked to close his hand, and at the same time to perform another movement, such for instance as raising the eyebrows, the one movement stops the other, they cannot be performed simultaneously.

The voluntary movements become weakened in intensity. The movements and muscular power are less than one would expect from the general health and appearance of the patient. This condition is sometimes characterized as *amyosthenia.* Thus, for instance, it is sometimes surprising to find in one or both of the upper extremities affected, that the dynamometric force is unduly diminished. In some cases it may fall to nine or even five units. In such cases the muscular weakness is both for active and passive movement; the patient is deficient not only in pressing or squeezing or in the performance of similar acts, but he likewise lacks the power of active resistance.

Amyosthenia, is as a rule, greater when the attention of the patient is diverted. Sometimes when the patient is asked to press the dynamometer with eyes closed, he does not press at all; it may register zero. The pressure increases when the patient is directed to concentrate his power of attention and will upon the effort. During all this time while the patient is unable to press upon the dynamometer, he may still in some other habitual exertions show great muscular power. We may call this form *Systematized amyosthenia.* The general law of amyosthenia is that *the disturbance proceeds from the complex to the simple and from the less useful to the more useful, and the more habitual functions, from the functions more associated with traumatic disturbances to functions with fewer traumatic*

associations.

The weakening of voluntary movements in psychopathies is especially pronounced in rapid repetition of the same movements, so that sometimes the patient may after a few endeavors be quite incapable of performing the movement. Tested, however, by other psychopathic methods, it is found that although the patient cannot perform these movements, he is still able to carry them out in a subconscious state.

Psychopathic motor disturbances, like sensory troubles, are essentially morbid modifications of the subconscious.

The general symptoms of psycho-motor disturbances in psychopathic diseases have been formulated as follows:

(I) The patient's movements on the anaesthetic side are largely guided by the sense of sight. If the patient does not see the anaesthetic member, the movement is performed subconsciously.

(II) In some cases when movements are apparently impossible without the sense of sight, if the eyes are closed in the middle of the movemnt, the process of movement may be continued.

(III) In some cases, when without the knowledge of the patient, the anaesthetic member is raised, it becomes cataleptic.

(IV) Movements can be induced in the patient without the help of sight, if the movements are brought about *subconsciously.*

Among other phenomena observed in psychopathic motor disturbances are synkinesia, allokinesia, and heterokinesia.

Synkinesia is the performance of associated move-

ments. If the patient's limb is anaesthetic in the left upper extremity, for instance, he is able to raise either the right or left hand with his eyes open, and the right hand even with closed eyes. If, however, he is asked to raise the left hand alone, the eyes being closed, he raises both hands. When the patient is told to execute certain movements with the left anaesthetic hand, he makes synchronic, symmetrical movements with the right hand. The patient is able to move his right hand alone, but cannot move the left alone, without synchronous symmetrical movement of the right hand.

The phenomena of allokinesia are parallel to those of allochiria. In allokinesia the patient is unable to localize well his peripheral kinaesthetic sensations. If for instance, the patient is asked to raise the right hand, he raises the left instead and is not aware of the difference. In this way the patient's anaesthesia or any form of motor disturbance may be transferred from one side to the other. The phenomenon of transfer is often due to this form of experiment.

The phenomenon of heterokinesia is rare. It consists in the performance of opposite movements. When the patient, for instance, is told to close his hand, he opens it, or when he wants to bend the arm, he straightens it.

Psychopathic tremor is usually hemiplegic or monoplegic that is, the tremor may occur on one side of the body, or it may be confined to one limb. The tremor, as in that of epilepsy, is usually present in the intervals between paroxysmal states. If, for example, the tremor is in the upper limb, and the patient is asked to extend the limb and keep it in a certain position a tremor of rather slight range, of about eight or ten oscillations per

second is observed.

There are two types of psychopathic tremor. The one form is present during repose and is only slightly affected by voluntary movement, while the other form may not be present during repose, but is greatly increased by voluntary movement. The tremor of the first type resembles that of exophthalmic goitre, while the second form is more like that of disseminated sclerosis. Emotional excitement increases both forms. The nature of psychopathic tremor like that of other psychopathic conditions, is some subconscious state. The duration of the tremors varies from a period of a few weeks to that of months or years.

The tremor ceases during a psychopathic crisis, or so called "hysterical attack," but becomes exaggerated shortly after, and may also become marked when pressure is exerted over the so called hysterogenetic zones. The tremor may occur in many parts of the body, head, neck or extremities, and is increased by fixation of attention.

Local and general clonic spasms of small range may occur. The movements in such spasms may assume a form which may be termed *psychopathic chorea.* Sometimes the movements are sudden and shock-like in character, suggesting electrical chorea. This form is easily acquired by imitation, and in the middle ages has at times become epidemic.

Rhythmical movements of more extensive range may occur; this condition may be termed *psychopathic rhythmical chorea, or psychopathic chorea major.* The movements are of wide range, deliberate, and complex. They are of regular sequence and consist of more or less alternate contractions of the muscles, especially

the flexors and extensors of the trunk and extremities. The movements are oscillatory, of regular rhythm and may last for weeks or months; they invariably cease during sleep.

Different parts of the body may be involved; the tongue, the eyes or the jaw-muscles may be affected. The rhythmical movement may extend to various members, sometimes involving the whole trunk. The tremor may be of such a character as to suggest a neuropathic condition. The movements are sometimes arrested by a strong emotion or by an anaesthetic, such as ether, or by a hypnotic, such as morphine. The temporary arrest is succeeded by psychopathic paralysis or contracture.

The convulsive attacks of psychopathic origin may be divided into minor and major seizures.

The minor psychopathic convulsive attacks usually follow some deep emotional disturbance. During the attack the patient may make wild and purposeless gestures, or aimless movements, utter incoherent cries, go into uncontrollable fits of laughter or weeping, sometimes of an alternating character. The onset of the attack is usually preceded by a premonition consisting of spasmodic movements of the muscles of the throat, giving rise to a sensation of constriction or to a feeling as though a foreign body were in the throat. This phenomena is known as *globus hystericus,* so named because it was believed that the cause lay in the ascent of the uterus into the pharynx. Some muscular rigidity may be present. Rigidity or contraction of certain muscles may be premonitory of the attack.

The movements in these convulsive attacks, unlike those of epilepsy, appear to be not altogether without

purpose. The patient may make an effort to seize a person or object, or to kick at something or destroy it. Efforts to restrain the patient forcibly meet with opposition and increase the violence of the attack. Frequently a characteristic tremor or quiver of the eyelids is observed when the patient closes the eyes. Pulse and respiration usually remain unaffected, although the breathing may become shallow. After a time, varying from a few minutes to several hours, the patient becomes calm, passive, and then depressed.

Major motor attacks, sometimes characterized by the inappropriate term of hystero-epilepsy, consist of convulsive seizures of a violent and extensive nature of definite types and stages. Attacks passing through definite stages are of rare occurrence, and when present are found in cases that show during the interparoxysmal period, some form of disaggregation, such as anaesthesia, aboulia or some motor disturbance.

The major motor attacks are hypnoidic in character being reproductions of conditions that have induced the psychopathic state. The major attacks have prodromal symptoms, which appear several days before the paroxysm. These may consist of anaesthesia, aboulia, aphasia, general nervousness, etc.

During the paroxysm, the sensibility of the patient is changed. There may be hyperaesthesia, or anaesthesia, clavus, epigastric pains or uneasiness, etc. This prodromal stage suggests the aura of epilepsy, but is altogether different in its nature. In epilepsy, the symptoms are due to neuropathic derangements, the neuron itself being affected, while in the psychopathic attacks the symptoms are due to dissociation of neuron-systems. Epileptic states are due to

organic or neuropathic disturbances, while psychopathies are subconscious affections.

The prodromal period is followed by the epileptoid stage, which may come on either suddenly or gradually. The face becomes pallid, the expression vacant, the eyes staring and the patient falls to the ground. The fall is not so violent and precipitate as it is in epilepsy, the patient rarely sustaining injury. The reason of this is that consciousness is really not lost. The subconscious self remains active and controls the movements and acts of the patient. In the beginning or during the epileptoid stage a sound is emitted, or word, or phrase is pronounced. At the height of this stage the muscles become rigid and finally the entire body is affected by tonic muscular contraction.

This condition may be succeeded by relaxation of the muscles. The patient is motionless and only a perceptible movement of the eyelids is evident. In some cases the relaxation does not occur. The next stage in the epileptoid condition may be followed by clonism, or the rare phenomenon of opisthotonos may be encountered,—the body is arched and rests upon the back of the head and foot-soles, the abdominal muscles become exceedingly rigid. Soon opisthotonos gives place to bounding movements of great violence.

The patient then passes through various emotions characteristic of the subconscious state. Various attitudes and expressions are assumed corresponding to the prevailing emotion. The patient talks incoherently. The movements are generally of such nature as to form more or less coordinated systems, they are usually of a struggling, defending nature.

The eyelids, are usually closed, the conjunctival re-

flex is diminished and general bodily sensibility is decreased. A pin stuck far into the flesh does not give rise to any manifestations or reactions of pain. A spasmodic laryngeal convulsion may be present giving rise to dyspnoea. The patient may be unable to swallow for hours or even days. There may be severe gastric disturbance, pain and vomiting. Anorexia may be so persistent, owing to fear of vomiting, that patients may absolutely refuse food for some time. The attacks may occur at long intervals and sometimes in such a rapid succession as to give rise to a *psychopathic status epilepticus.*

The various stages of the major attacks should be regarded as the emergence of a hypnoidic state, as the growth and development of an abortive subconscious personality. A hypnoidic state consists of emotional disturbances with a change of sensibility accompanied by motor disturbances. The *emotion forming the nucleus of the hypnoidic state is generally the manifestation of some event that had occurred in the patient's life,* but which afterward subsided within the subconscious, in a form more or less disaggregated from the patient's upper consciousness, and now recurring at each favorable opportunity. The hypnoidic state is the hallucination of an actual past event.

The reason why the attacks recur, is that the emotional state with its train of psychomotor manifestations, is easily brought to the surface by the influence of certain stimuli, events and circumstances recalling the original trauma with all its consequences. These stimuli, acting on the patient, may modify his general sensibility. This modification of sensibility when associated with the hypnoidic state brings

about a recurrence of that very state. If the patient is disposed to this hypnoidic state, that is, if there is a tendency to the arousal of those subconscious mental systems, the least stimulus that suggests any of the component associations that go to form the total complex system will bring about that particular synthesis of systems of sensibility that go with that particular hypnoidic state.

The general law of psychology and especially of psychopathology is that *a sensory state has motor and glandular accompaniments or reactions.* As Pavlow and his pupils have shown, modifications of sensory impressions are associated with glandular secretions. The same holds true of ideas, every idea has relations to motor reactions and glandular changes. A change therefore of sensibility with its accompanying changes in ideas and images will bring about a motor disturbance. This motor disturbance is of a nature characteristic of that hypnoidic state with which that particular modified sensibility is associated.

If two states have been associated, the presence of the one will recall the other. Thus epileptoid states arise with their sensori-motor disturbances and glandular changes. Sensori-motor, visceral, and glandular disturbances give rise in their turn to a change in the emotions, because different emotions are made up of various peripheral and organic sensations, coming from different parts of the body. A change, therefore, in sensori-motor activity gives rise to a profound modification of emotional life. It is clear that a profound disturbance of sensori-motor, ideo-motor life and glandular activities must be followed by emotions with their concomitant motor ex-

pressions.

The emotions develop a fully systematized hypnoidic state, recalling and reviving in a perceptual form all the circumstances that occurred at that time; the patient, being in a delusional state having hallucinations and illusions, considers himself in quite another environment. Thus in the psychopathic convulsive attacks the hypnoidic state is apparently passing in an inverse form through the various stages of its original occurrence. In reality all the manifestations and symptoms are guided and controlled by the awakening of the submerged, subconscious, emotional, hypnoidic state.

Contracture is common in the psychopathies, but it is less frequent than anaesthesia. Contracture may be caused by various stimuli, such as a blow, electric current, massage, etc., and often follows a convulsive seizure, or an intense overwhelming emotion. As a rule, contracture occurs suddenly, and when of gradual onset follows amyosthenia, paralysis, or convulsive attacks. The contracture may affect a bundle of muscle giving rise to a kind of tumor or it may affect a number of muscles. As a rule the voluntary muscles are affected, but the involuntary muscles, such as those of the bowels may be involved.

Psychopathic motor disturbances may be of the monoplegic, the paraplegic, the hemiplegic, the crossed, the general, the periarticular, or the irregular type. In contracture of the upper extremity the fingers are strongly closed upon the palm, the wrist and forearm flexed in the position of pronation or supination. When the lower limb is affected, the thigh and leg are strongly extended and the foot is in the equinovarus

position. The thigh is in a position of adduction, the entire limb is held in strong muscle contraction. Occasionally flexion instead of extension occurs. In the hemiplegic form the arm is usually flexed and the leg extended.

The left side is often more involved than the right. Both extremities may be involved or the contracture may pass from one to the other. In the paraplegic type both legs are extended and adducted. All four extremities may be involved. In the so-called periarticular variety, in which the muscles about the joint are involved the several forms of talipes are simulated. Contractures of the muscles of the face may also occur.

Generally the contracture is uniform while it continues, but sometimes it varies at irregular periods. It is as a rule greater when an attempt is made to overcome it, and the increase of resistance of the muscle in proportion to the effort made to overcome it is of great value in the determination of the psychopathic nature of the contracture. The contracture, unless of a mild degree, may persist during sleep, but disappears in hypnosis and deep anaesthesia, induced by such drugs as alcohol, chloroform, and ether. In rare cases of very long standing structural changes may occur.

So-called hysterical trismus is due to contracture of the muscles of mastication. In this condition the jaws resist all efforts to operate the mouth. When the trismus follows a motor paroxysm it generally persists until another paroxysm occurs. Contractures in the jaw depressors leading to opening of the mouth are very rare. Contraction of the abdominal muscles and intestines may give rise to the so-called phantom tumor. Pressure may sometimes change the form of the tumor.

Psychopathic paralysis consists of a loss of control in certain muscles, and is a frequent symptom in psychopathic diseases. The paralysis may vary in intensity, and is usually of very rapid or sudden onset.

The most familiar form of paralysis is the hemiplegic type and usually follows a paroxysm. When only one limb is affected, all of its muscles are involved, and the member is simply dragged along and not swung in a semi-circle as is the case in familiar forms of hemiplegia of organic nature. The loss of power is not complete. Certain forms of psychopathic ataxia are also observed. Resistance to passive motion is regularly sustained, but varies from time to time or moment to moment. An effort by the patient to set in motion a certain group of muscles, such as the flexors of the foot, may throw into activity the opposite group, the extensors, thus bringing about the inhibition of the intended movements. A tremor is often present in the partially paralyzed muscles. There may be slight atrophy present due to disuse.

The electrical reactions remain normal. Pain in the spine is not uncommon, and may intensify the paralysis. Complete loss of power is rare, the patient is able to move the limb slowly, but falls to the ground, when attempting to stand. The myotactic irritability is often increased. A pseudo or spurious foot clonus, however, is sometimes elicited due to a subconscious contraction in the calf muscles. The contractures in psychopathic states are often persistent remnants of hypnoidic states, after the states themselves have subsided into the subconscious regions.

The origin of psychopathic contractures, as indeed of all motor disturbances, may be well demonstrated

by experiments which may be made in hypnosis. If, for instance, during the hypnotic state the patient is directed to do something, to take an imaginary bird, for example, and keep it tightly in the hand, the subject upon coming out of the hypnotic state, will keep the hand closed and will be unable to open it, though he does not know why it remains in that position. Such states are termed by me *"hypnonergic."*

These contractures, like all other allied conditions in psychopathic states, are of the same nature as those induced during hypnosis and persisting in the post-hypnotic state. In the psychopathic disturbances the hypnonergic states are more persistent, although they may pass away again as easily and suddenly as in those of hypnosis They are due to present and past mental and emotional disturbances.

Astasia-abasia is a form of psychopathic incoordination observed most frequently in children, the principal psychomotor manifestation being the inability to maintain the upright attitude. Tremors and movements of a choreic nature are sometimes present. In reclining postures the legs have normal power, but on attempting to stand or walk the patient falls or moves in a most awkward manner. There are no objective signs to indicate organic change in the motor apparatus. The onset is sudden and is generally due to subconscious emotions, to dissociated mental states. Other psychopathic symptoms may be present. The psychomotor manifestations of astasia-abasia are as sudden in their disappearance as in their onset.

Psychopathic mutism, or aphonia is often of sudden onset and usually disappears suddenly. The difference between psychopathic aponia and psychopathic mutism

is that while in the former the patient can still speak in a whisper, in the latter he cannot speak at all.

Sometimes in mutism words and phrases can still be produced, and are usually those that were uttered during the accident or fright that caused the functional disturbance. Such phrases are hypnoid in character. In sleep the subject of psychopathic mutism shows the ability to talk during dreams. Such dreams are really hypnoidic states.

Psychopathic aphonia may have its origin in the local affection of the larynx, but in some instances it appears spontaneously, specially after an intense emotion with subconscious mental dissociation. The laryngoscope may show paralysis of the adductor muscles of the vocal cords. The voice may often be brought out during coughing, and is then found to be possessed of its usual character. Frequently the patient, though not able to speak aloud, is still able to use his voice in singing. In rare cases of psychopathic aphonia the tongue may also be affected in the paralysis.

Stammering is often present in psychopathic persons. It is very much like the aphonia in character and is often the result of intense dissociative emotional states, occuring mostly in children. In cases of aphonia under my care the patients talked in dreams or in the deep conditions of induced subconscious states.

The phenomena of stammering may be explained best by a brief reference to the factors operating in the production of speech.

In the production of speech we have two sets of mechanisms: the laryngeal and the oral; the former produces the vocal elements of speech and the latter, the oral, modifies the sounds of the larynx as to tone or

timbre and helps in the production of new sounds.

In stammering the common defect is due to delayed activity of the laryngeal mechanism; occasionally the oral mechanism may be at fault. When the patient tries to speak he throws the increased force into the lips. The centre of the oral mechanism thus becomes surcharged with energy and spasmodic movements even of great extent may occur. The nerve-centres of the speech-mechanism become so surcharged with energy that its liberation may give rise to irritation of other centres and extensive movements in various parts of the body may result.

Stammerers find it especially difficult to pronounce the first syllables of words. No matter how difficult it may be for the patient to speak he can always sing with ease, because the vocal elements which form a part of speech and by which song is produced are formed in the larynx, and the laryngeal mechanism in itself is not effected, but only its cooperation, or association-activity with the oral is interfered with. Stammerers in ordinary conversations may be excellent preachers, and in rapid conversation or speech, experience but little difficulty.

Partial catalepsy is a psychopathic motor disturbance in which the extremities of the patient tend to maintain any position impressed upon them, and is due to a local disaggregation of the systems of neurons innervating the particular limb. The pathology of this state may be well represented as follows. Let C represent the muscles of the limb, B the motor centre which innervates them, A the centre for the kinaesthetic sensation of the limb, D and E the fibres going from the centre to the limb and from the limb to the

centre. Assume now that the centres A and B are dissociated from the other brain centres, thus forming a closed system. Any impulse brought to the centre B, will provoke a discharge, which propagated through D will excite movement in C. The contraction of C gives rise to a discharge which is propagated through the sensory nerve to the kinaesthetic centre, A, awakening a kinaesthetic sensation. The energy from A is then propagated to B and there is once more a discharge of energy in B which again gives rise to a contraction of C. This goes on until the centres are exhausted, the limb being maintained in the same position. This form of catalepsy is known as a *recurrent state* or as *circular reaction.*

Partial catalepsy usually occurs in limbs which are anaesthetic. A very slight stimulus may change the position of the limb leaving it in the same state of rigidity and catalepsy. The cataleptic condition is characterized by its persistency and duration, the affected limb retaining for a long time positions impossible in the normal state. So rigid and steadfast is the cataleptic limb that tracings taken of it on a smoked drum show a straight line, while the normal member held in the same position shows a quite irregular tracing, due to tremor. The rigid limb can often maintain its position for a half an hour, and the interest lies in the fact that no fatigue is felt by the patient, although sometimes he may complain of severe pain in the limb.

During the cataleptic state the patient does not know the position of the limb, and may have an erroneous impression as to its position when his attention is distracted. If the patient is asked to change the attitude of the limb, he is unable to do it, not knowing its

position.

In the cataleptic state the phenomena of *rapport* may be present. If the arm, for instance, is placed in a certain position, that position can be changed only by the experimenter who induced it, and by no one else. If a definite movement is imparted to the cataleptic limb, the member will continue to move with regular rhythm, the patient being unconscious of the movements. If however, the patient's attention is drawn to the movements, they cease at once, to be resumed when the attention is withdrawn. If the arm is placed in a cataleptic state, adaptation to certain objects placed in the hand, occurs. For instance, if a pencil is put in the hand, the fingers grasp it, and sometimes begin to write.

Catalepsy is said to be general, when it involves the whole body. General catalepsy is common in the third stage, that of emotional attitudes, of the major attacks of the psychopathic paroxysm. At the beginning of the attack there may be some rigidity and then a condition of wax-like flexibility (cerea flexibilitas) follows. Such a condition occurs also in insanities as in katatonia. General catalepsy may also be produced in hypnosis. It occurs also in melancholia, and is sometimes present in epileptics.

In complete catalepsy the entire body becomes more or less rigid, the limbs remaining in the position they have originally assumed. At first the muscular rigidity is considerable and an attempt at passive movement is resisted. Soon however, the limbs become flexible and remain in any position in which they are placed. The rigidity finally yields when the energy from the innervating centers becomes exhausted. The state of sen-

sibility varies. In deep cataleptic states sensibility to touch, pain, and electricity is lost. The reflexes including the conjunctival are lost. In rare cases the reflexes and the general sensibility remain unaffected. Cataleptic attacks are sometimes preceded by hiccough, headache, and dizziness.

It is not uncommon to find a periodicity in the recurrence of the cataleptic attacks. This periodicity, however, is readily understood, since the cataleptic state is hypnoidic in character. Catalepsy is a hypnoidic state.

The physiological tendency of systems of cells in their functional activity is to form habits in which the energy discharges or runs down in some regular clock-like form. The hypnoidic state in catalepsy may be called up by stimuli which may happen to come at regular or irregular intervals. More often, of course, they will come at irregular intervals, and the hypnoidic cataleptic state will then occur irregularly. Some stimuli, however, may happen to come a few times at regular intervals, the disaggregated systems thus form a habit to appear at regular intervals; hence the periodicity of the attacks.

Lethargy is a psychopathic disturbance in which the patient is in a sleep-like state, with slowness of muscular movement, due to exhaustion of neuron energy. The patient is aroused with difficulty. Etiologically hereditary or neurotic predispositions play important rôles. Excessive mental work, exhausting fevers, such as typhoid, etc., influenza and trauma, especially when associated with strong emotion are among the proximate causes. Intense emotions alone in those predisposed may be an exciting cause.

Lethargy is generally sudden in its onset, the state

lasting from a few days to several weeks. During the attack the limbs are limp and the face is pallid. The closed eyelids cannot be opened, the subject apparently resisting the attempt. The eyeballs are turned upward; the pupils remain normal in size and in their reaction. There is occasionally a change in reflex activity, the nasal and conjunctival reflexes sometimes being absent. The upper consciousness is in abeyance and the special senses may be unusually keen, although motor manifestations are inhibited, owing to a disaggregation within the psychomotor areas.

The pulse, as in sleeping states generally, is often small and the respiration may become shallow and scarcely perceptible. The temperature is normal. The urine may be retained or may be passed involuntarily. The vital functions may be so depressed that the patient may be seemingly dead. This state is sometimes characterized as *morbus hypnoticus*. If the trance-state is long in duration, the patient may awaken partially and partake of nourishment. The end of the state is often indicated by sighing or deep breathing.

Vaso-motor changes, such as extravasations, may occur. The deep lethargic state sometimes closely simulates real death, the fundus of the eyeball, however, is normal, the muscles react to electricity, and there are no signs of degeneration.

The lethargic state, like the cataleptic, is doubtless of a hypnoidic nature, subconscious activity being occasionally made manifest by movements and exclamations. In some cases it is possible to come into direct communication with the disaggregate subconscious, and to induce illusions, hallucinations, various movements and reactions and adaptations to the illusory and hal-

lucinatory environment.

In visceral disturbances of psychopathic character, gastric paraesthesia is common, giving rise to sensation of fullness or distention, sinking, emptiness, etc. So called nervous dyspepsia with its attendant feeling of distress may be present. There may be spasmodic contracture of the oesophageal or pharyngeal muscles produced by taking food in solid form. The spasm may last for a short period, or may persist for months. When there is vomiting, it may or may not be accompanied by nausea; the vomiting sometimes seems to be provoked by food, irritating the gastric mucous membrane. There may be slight haematemesis, the blood being of a bright color.

Psychopathic anorexia or *anorexia nervosa* is not uncommon. The patient in this condition has a disgust for food and rejects it. A perverted taste for odd or indigestible material is occasionally present. The patient's nutrition may suffer severely, and he may lose greatly in weight.

Intestinal derangements are not unusual, nervous diarrhoea or obstinate constipation is sometimes observed. Accumulation of gas in the bowels giving rise to borborygmus is common, often causing cardiac palpitation and respiratory difficulty. The heart-beat is rapid and weak; there is paleness, general muscular weakness and dizziness which may end in syncope. Polyuria, either permanent or temporary, is not uncommon, the patient sometimes passing a large quantity of pale urine; haematuria is rare. Ischuria occasionally occurs. Perspiration may be profuse. There may also be severe vomiting.

In psychopathic states patients, especially women,

often locate the trouble in some part of the genital apparatus. This gave rise to identification of psychopathies in general with those associated with uterine disturbances, under the name of hysteria, or sometimes hystero-neurosis, which really bear no relation to sexual organs in general and to the uterus in particular.

The sexual organs, like any other organs, may give rise reflexly to psychopathic disturbances, but psychopathic states, can be as little identified with sexual troubles as with gastric disturbances. Women are prone to refer their ills to sexual derangements, because by education, training, and persistent suggestion the sexual functions are given undue prominence in the patient's mind. Frequently, especially in former years, all sorts of operations, hysterectomy, ovariotomy, etc., have been resorted to for the alleviation of psychopathic affections.

The recent psychoanalytic theories of hysteria and hystero-neurosis, implying the relation of psychopathic states to sexual life are scientifically fallacious and practically extremely harmful to the patient and pernicious to the community. A good deal of the sexual matter claimed to be revealed by psychoanalysis is due to suggestions given by the patient's surroundings and education, and then specially enforced by the physician's psychoanalytic, preconceived prejudices.

Among the psychopathic visceral disturbances involving the mechanism of respiration we find psychopathic asthma. There may be cough and profuse expectoration, occasionally followed by convulsive or spasmodic attack of dyspnoea. There is often a reflex so called "nervous cough," of psychopathic nature. It is of a hard, dry, paroxysmal character; it may occur many times during the day, and be of short or of long dura-

tion. The cough ceases during the night when the patient sleeps. Psychopathic coughs are sometimes produced in imitation of the cry of an animal, such as the barking of a dog or mewing of a cat. These peculiar noises sometimes occur in epidemic form. Hiccoughs, yawning, sobbing, etc., may occur in paroxysms.

Irregularities in cardiac rhythm are common and these are provoked by the least emotional excitement. Tachycardia is frequent. The attacks may be of several hours' duration. Angina pectoris of psychopathic origin is sometimes observed. Bradycardia is rare.

Vasomotor changes are found in some cases. Sudden flushing or pallor of the face, or of the upper part of the body accompanied by heat and cold sensations are observed. At times constriction of the blood-vessels may cause local cyanosis.

Various skin eruptions are occasionally observed in psychopathic cases. These have been regarded and described as hysterical or psychopathic. They are, however, neuropathic in their nature, though they may be often associated with psychopathic states.

We cannot impress too much on the physician's mind that *all psychopathic disturbances, whether sensory, motor, visceral, and glandular, are essentially morbid affections of the patient's subconscious life.*

One important law holds true of all psychopathic maladies and that is all *conscious losses* are *subconscious gains.* Whatever function is lost to the upper consciousness is present to the subconscious. This can be tested by the various methods for reaching the subconscious.

CHAPTER XIV

ILLUSIONS

THE brain receives impressions from the external world. These impressions stimulate the activity of groups and systems of neurons and give rise to complex physiological processes having sensations as their concomitants. These processes stimulate activity of still more complex systems, groups of systems giving rise to physiological processes, having percepts as their accompaniment, and finally with the awakening of the activity of the highest constellations of neurons with their concomitant moments the highest form of consciousness, conceptual thought and judgment, is formed. There may be a disturbance in any of the several levels of psycho-physiological activity. Where the disturbance is chiefly of a perceptual character it gives rise to illusions and hallucinations.

An illusion is a wrong perception of stimuli coming from an external source, a false perception of an external object. If an object, such for instance as a chair, is regarded as a man, the percept is illusory, and the perception is an illusion.

Illusions may often appear in healthy individuals in waking states and more specially in dream states, in fact, art, such as painting, scenic effect produced in the dramatic world, etc., is based upon illusion. Illusions are common in psychopathic diseases, they may be induced in hypnosis and in other forms of subconscious states. Illusions occur most frequently in the insane.

An hallucination differs from an illusion in the fact that the projection of the precept is more subjective in its nature. There may be nothing in the external world and yet the subject or patient perceives a person or hears a voice, for instance, when no sound is present. An illusion seems to be more peripheral in its nature while an hallucination seems to be more central in its character. There can be as many illusions or hallucinations as there are special senses. Hence they may be classified as visual, olfactory, gustatory, auditory, tactile.

The physiological processes which operate in an illusion are as follows: In general the perception of an object consists in a synthesis of a present sensation with emerged subconscious, secondary sensations. Take for instance an apple, the perception of the apple may be by simple vision; we may see the outside general form, or perhaps only the general outline of the form and color, the one due to muscular eye movements and the other due to processes within the optic nerve.

These sensations are peripheral incoming impressions, they would not in themselves constitute the perception of the apple. Along with them is aroused the spherical form of the apple, which could not be perceived by the visual sense alone, but depends also on muscular eye movements, and depends also on previous tactile and muscular sensations in the handling of the apple. The solidity and hardness of the apple, which depend on sensations given by the resistance and the weight of the apple, are due to muscular and tactile sensations. Then the peculiar taste and smell of the apple depend on previous gustatory and olfactory sensa-

tions. The average temperature of the apple is also an aid. All these psychic processes are awakened as soon as the eye perceives the apple.

The eye itself cannot smell, or touch or weigh the apple; it cannot feel the solidity of the apple, and yet all these are present in the vision of the object. It is evident therefore that in seeing an apple the visual sensation awakens, by association, many subconscious psychic processes which form a synthesis in the percept, apple. This can be accomplished not only by vision, but also by the olfactory or tactile sensations, or even by auditory sensation, such as the peculiar sound which the paring of the apple produces.

If A, B, C, D, E, F, etc., represent the associated physiological processes, and if A is peripherally awakened, then the others become synthetized and form the percept. The same occurs if B first appears, the rest of the processes may become synthetized, etc. In short, all these processes form a system, and if one is awakened all the rest may appear and become synthetized.

Suppose now another synthesis, that is, one resulting in the percept of another object, is formed in which one, two or more of the elements of another system, elements which are common to both, are present. The two synthetized systems may become interchangeable by the principle of association by contiguity or resemblance. Thus it is possible that under certain circumstances, such as change of intensity of one or of some of the sensory components, or of lack of critical discrimination of the differences and details of the presented content instead of the one system exactly corresponding to the object being awakened, another one, which does not exactly correspond to the object is brought out in-

stead. This will constitute an illusion. In art we find common examples when for instance artificial objects are made so as to represent as nearly as possible the real object.

Living in a more or less constant environment, certain sensations naturally give rise to the most familiar systems, but when the environment is changed we often fall into illusions. Our environment, however, does not go on changing so rapidly as to give rise to illusions, and, therefore, our familiar percepts are correct, corresponding to external objects. These familiar percepts are adaptations between external objects and internal relations.

Instead, however, of there being a disturbance in the external relations, in the environment, there may be derangement of the internal psychic processes. A stimulus therefore may give rise to sensations and instead of calling out the most familiar synthesis corresponding to this aggregation of external stimuli, calls out some other system, having something in common with the most familiar system. This gives rise to illusions. As a rule in ordinary illusions of common life, there is some similarity between the object and the illusory system awakened, but in insanity and under the influence of some toxic agents, the disturbance may be so great that but slight, inessential similarity is present.

In illusions the peripheral sense organ may be in no way at fault, as a rule it is not, but rather the subconscious psychic systems which are excited and go to form the percept are at fault. In short, *the fault is not in the sensation, but in the association.*

An aggregation of stimuli giving rise to peripheral

sensory impressions and awakening sensations excite also subconscious psychic processes which in themselves are not of the nature of direct sensation, but rather of the nature of indirect sensation belonging to the most familiar systems of synthetized psychic processes forming familiar percepts.

There are, however, cases, though rare and unusual in common life, in which an impression, giving rise to a special sensation, *directly* revives another impression also of a sensory character, giving rise to what we may call a *secondary sensation.* There is no external stimulus present to awaken this sensation, but it is awakened by the excitement of another special sense organ.

It seems that in such persons there must be an association formed between two or more of the lower sensory centers. Thus for example there are persons who seeing a certain color, for instance, red, will at once hear a certain sound. This is not in the nature of a memory merely, the patient seems really to hear the sound.

A sensation of smell may give rise to a sensation of light, etc. Sometimes the sensations may be related. For instance, a certain form, say that of a certain letter, may awaken the sensation of a certain color. In this way all kinds of combinations may be formed.

There may be various combinations of primary with secondary sensations. We may have the following photisms and phonisms or synaesthesia:

Sound photism,	Light phonism,
Taste photism,	Taste phonism,
Pressure photism,	Pressure phonism,
Movement photism,	Movement phonism,
Smell photism,	Smell phonism,
Touch photism,	Touch phonism,
Temperature photism,	Temperature phonism,

In fact any combination of primary with secondary sensation may be present.

These secondary sensations are due to the formation probably of certain special, subcortical associations between the respective sensory centers.

The following laws have been formulated:

1. Photisms bright in color are produced by sounds of high quality, by intense pain, sharply defined sensations of touch. Dark photisms form opposite conditions.

2. High phonisms are produced by bright light, well defined outlines, small objects, pointed forms. Low phonisms form opposite conditions.

3. Photisms are associated with well defined forms, small, pointed; photisms are often produced by sounds of high pitch.

4. Red, yellow, and brown are frequent photism colors; violet and green are rare, while blue stands between these extremes.

Secondary sensations in their pure form, although found in normal persons, usually appear in those of neurotic tendency and in psychopathic states.

CHAPTER XV

HALLUCINATION AND PERCEPTION

HALLUCINATIONS consist in the perception of objects which as far as it is possible to determine have no existence in the external environment at the time perceived, or may have no existence whatever. If a man sees, for instance, the stump of a tree and takes it for an animal, we would say he has an illusion. If, however, there is no object at all, but still the man perceives a moving animal or object, he is the subject of an hallucination. In the same way hallucinations may be of a gustatory, olfactory, tactile or auditory character.

Putting together hallucinations and illusions, we may arrange them in the following order of frequency, hearing, sight, common sensibility, smell, and taste.

Various theories have been advanced to explain the mechanism of hallucinations, but none seem satisfactory. In my works I ventured to advance the following theory: *Hallucinations are of the nature of secondary sensations.* When a certain stimulus makes an impression on a peripheral sense organ and gives rise to secondary sensations we really have an hallucination, but in its simplest form. The one who on perceiving the letter A sees at the same time a yellow or red color, or hears a sound or feels a touch, really has a hallucination. He has a sensation which has no corresponding external stimulus. Thus far it is quite clear that hallucinations at least in their simplest form may be nothing else than

secondary sensations.

We have seen previously that sensations form the cue, awakening subconscious psychic processes which become synthetized into a percept. If the secondary sensation is of such a nature as to enter into a subconscious synthetized system, it will awaken a percept, and we shall have the hallucination of objects. The corresponding physiological process is the dissociation of the sensory centers or of some groups of neurons within the sensory centers from the corresponding perceptive center, and associations of these groups with those of another sensory center.

This process gives rise to secondary sensations, which in their turn may give rise to a complex physiological activity, awakening subconscious processes, with the psychic correlate, the percept, the hallucinatory percept. The least stimulus may give rise to such dissociations of groups of neurons within the higher perceptive centres, and to the formation of new subcortical associations of the disaggregated groups, resulting in the formation of hallucinations. The stimulus, will in fact, be disregarded by the patient and the hallucination will absorb his entire attention. The hallucination in such a case is regarded of purely central origin. In this way voices, visions, and similar hallucinations are generated.

Hallucination plays an important *rôle* in the domain of psychopathology, it is therefore advisable to enter into a more detailed study of the subject. The subject of hallucinations forms the stumbling block both of psychologists and psychopathologists. The deeper we penetrate into the subject the greater confusion we encounter. Some regard hallucinations as being of peri-

pheral origin, others regard them as central in character, while still others go to the extent of claiming that the most central hallucinations are of supernatural origin, being communications and messages from a transcendental world. In view of the importance of the subject it may be well to make an attempt to throw some additional ray of light on this obscure matter from the standpoint of psychological and psychopathological analysis.

The usual definition of illusion and hallucination is with regard to the external object. Illusion is defined as fallacious perception of some actually existing object, while hallucination is perception of a non-existing object. This definition is good for practical purposes of the clinician, but it is not psychological. From a strictly psychological standpoint illusions and hallucinations cannot possibly be differentiated from other psychic states by the presence or absence of external objects. External objects can hardly be regarded as constituents or necessary ingredients of psychic states. Illusions and hallucinations should be defined in terms of psychic processes. In order to get a clearer insight into the nature of illusions and hallucinations it may be well to begin with a brief analysis of the process of perception.

If we take a cross-section of a moment of consciousness and try to fixate it with our mental eye, we find a central psychic experience, or psychic element round which other psychic experiences or psychic elements are crystallized and organized. This psychic experience, or central element, is prominent, vivid, and constitutes the vital point of all the other organized states, giving the tone to the rest, to a whole, to one organized ex-

perience.

The psychic matter that surrounds the luminous central point does not stand in a free more or less disconnected relation to the latter, it is intimately related to the center, and cannot be separated without destroying the moment as a whole and even the life existence of each particular constituent. The whole moment seems to form an organic network in which the other elements take their place according to a plan.

The structure of the moment may in this respect be compared with that of the cell. In the cell we discern a nucleus round which cytoplasm is grouped. The protoplasm is connected with the nucleus by a network imbedded in the cytoplasm. The destruction of the nucleus affects the cytoplasm and the destruction of the cytoplasm affects the nucleus. The two are intimately, organically interrelated by the common network, the general plan of their organization.

If we closely examine the percept, we find in it a central, sensory element, surrounded by other elements. This central element stands out prominently in the given psychic state, while the other elements are subordinate. Not that those elements are unimportant for the percept, on the contrary they are of the highest consequence and moment, they only lie outside the focus of the mental state. Along with the focus those elements form one organized whole. All the elements of the percept form one texture, having the central sensory element as its nucleus.

Integrated, however, as all these elements are they are not of equal value and importance to the life existence of the whole. The central sensory element is of the utmost consequence, it is the vital point of the

total experience. While the change, or destruction of one or of some of the subordinate elements may still leave the total percept unchanged, or but slightly modified, a change of the central sensory element or of the nucleus will profoundly modify all the other elements and their interrelation.

The elements of the percept may be regarded as bound up in a 'chemical' compound, so to say, together giving rise to the qualitative aspect of the total combination, the difference being that in the psychic compound there is a central element that gives the keynote to the combination; in the chemical compound the elements are all equal in value and importance. To form water for instance, an atom of oxygen to two of hydrogen is required; the oxygen and the hydrogen are both equally requisite to the formation of the compound; one is not more important than the other. Not so is it in the psychic compound; there the elements are of unequal value. The most important of them is the nucleus; it determines the interrelation of the psychic elements and also the outcome of the whole combination.

From a biological standpoint we can well see why this should be so. A psychic compound is biological, not purely physical or chemical. In the physical components there is no higher and no lower, all are of equal value; in the psychic, as in all life existence, there is a higher and a lower structure. In other words, the biological compound is peculiar and different from the chemical, inasmuch as the former is really not a compound, but an organization. The characteristic of organization is just this systemic combination of parts related in different grades and orders of importance for the total life existence of the whole.

Looked at from another standpoint we can further see the necessity of such a central element. We have pointed out in another place that one aspect of the biological process is that of purpose, and if that be granted, then psychic processes regarded as highly developed biological processes should present this general characteristic of purposiveness in its fully developed form. Now, where purpose is involved the end alone is the important thing, all the other elements are for that end, subordinate and determined by it.

Not that the other elements are unimportant; they may be intimately related, but they, after all, are only means to accomplish the end. The elements that have for the time being the organizing power to aggregate round themselves the proper elements and lead towards the required end are predominant. For every psychic state is essentially for some reaction and that sensory element which gives the cue for the formation of the psychomotor elements, leading to some given reaction is for the time being the center, the nucleus of the total state.

The flower before me attracts my attention. I see its color of a light violet tint, its rounded bell shape and its velvet-like softness; I stretch out my hand, carrying the flower to my nose, to enjoy its fragrance. What I really see is the violet tint; the rest of the elements are not given directly, they are largely inferred. The shape is largely an inference from previous muscular eye-movements and its softness is derived from previous tactual experiences. They are all however, perceived by the eye, the cue being given by the prominent visual sensation.

Although the flower as percept appears as an organ-

ized whole, still the sensation of sight forms the nucleus round which the others cluster; the perceptual tone is given and determined by the particular sensations of sight. The softness, though perceived, is still altogether different from the sensation softness as directly experienced through the organ of touch; it is a sensory *sight* softness. The same is true of all the other sensory elements; they are all essentially determined in their quality by the central sensation.

In seeing a lump of ice we perceive its whiteness, its transparency, its hardness, its smoothness, etc. The hardness and smoothness are essential elements of the percept ice. These elements seem to be given directly in sensory experience. They seem to be directly perceived and still are qualitatively different from the hardness, smoothness, and coldness as given directly by the experience, when the hand gets hold of a smooth lump of ice. The sensory elements are determined and colored by the central, visual, sensory elements. The sensory elements of coldness, hardness, smoothness are of a visual character.

It is usually claimed that such additional elements that are not given directly by the stimulated organ are elements representative in character, derived from memory. This statement is not quite correct. In seeing the piece of ice the hardness, smoothness are not represented, they are *presented* to the eye; we really seem to see, to experience these sensations going to make up the percept ice. It is not true that on catching sight of a whitish, transparent, glittering lump we remember that it is also hard, smooth, and cold.

The whole percept with all its sensory elements appears at once in the synthesis of the percept ice—we

see, we perceive the hard, smooth, cold ice. The hardness simply remembered is altogether different from the hardness perceived in the seeing of the lump of ice. The hardness, smoothness as they appear in the ice are different to the eye, and as different psychologically from the corresponding representations as the latter differ from the corresponding sensations directly experienced by the appropriate sense organs.

Pathological cases seem to confirm the same point of view. There are certain mental diseases, when the patient can perceive the object correctly, though he cannot represent it to himself. The patient can perceive all the elements on being confronted with the object, but by no means can he remember them. On the other hand, there are cases when the patient can easily represent to himself objects, but cannot recognize the object when directly confronted with it.

The subordinate elements in their turn play an important *rôle* in the total unity of psychic experience, in the percept, inasmuch as they give the *content* of the total moment, fermented, so to say, by the predominant nuclear element. The visual elements, the perception of play of light and shade would have been nothing but mere play of light and shade, if not for the subordinate tactual and motor elements that give rise to the perception of distance, dimension, size, body. The leading element gives the character to the content by having it appear under its own special sensory aspect, while the other elements give the content to the whole moment. Thus where space is perceived through the organ of sight mainly, the space is visual in character, though the content that gives rise to the perception of space itself is filled in by other psychic elements.

The central element with its content may be regarded as the nucleus of the cell, surrounded by its cytoplasm, and the total organic whole may be termed psychic compound. Now in the psychic compound the constituent elements of the content can no longer be directly discriminated. In the lower forms of mental life the elements are firmly bound as we find it to be in the psychic compound—the percept.

In the forms where the elements are more complex the synthesis results in fusion in which the elements can be more or less easily discriminated. Thus if one listens to the beats of a metronome and to the rhythmical vibrations of a pendulum, the sensations blend and fuse, the sounds seem to proceed from the vibrating pendulum. The same case is well illustrated in the well-known amusement of having one hidden behind a screen and making a speech, while another one is watched who is gesticulating in accordance with the modulations of the speaker's voice. The two series of sensations blend and the voice seems to proceed from the gesticulating person. The synthetized elements here are fused or more or less "mechanically" joined instead of being firmly combined in a sort of "mental chemistry."

In the higher and more complex mental states the constituents of the synthesis are neither "chemically," nor "mechanically" fused. The constituents stand out free and distinct. While I am writing this page I see on my table at one glance the light, the lamp, the paper, the pen writing words and lines, and hear and feel the pen move on the surface of the paper; at the same time I see the table, the chair in the room and hear the ticking of the clock. The multiplicity of all these experiences

is simultaneously synthetized, and at the same time discriminated in the unity of the total experience.

In the processes of succession of complexes of psychic elements, in the trains of ideas, the constituent elements attain their greatest freedom and independence. In the states of perceptual synthesis, on the contrary, the directly experienced sensory elements, constituting the nucleus of the percept call out immediately their appropriate associated, perceptual elements, and the compound, the percept, appears, as a whole that can be analyzed only under highly artificial conditions. *Fixity is the essential characteristic of lower mental stages as well as of the percept.*

The constituent psychic elements are so intimately united in the percept that they resist efforts at decomposition. If a percept *A* is composed of elements *a, b, c, d,* and if *a* be the nucleus, the stimulation of the nucleus brings out the rest—*b, c, d.* The central, or nuclear element is purely sensory, but the rest of the psychic elements *b, c, d,* are not sensory in the same sense as *a* is, since they are not derived from direct stimulations of the appropriated sense organs. Their character is not primarily, but only *secondarily* sensory.

The retina gives only light sensations. The most differentiated and highly organized retinal structure of the highest vertebrates, such as that of the higher mammals, can only give rise to local signs, to highly differentiated light sensations varying with each retinal point or element, or cellular termination. The stimulated retinal elements with the neuron terminations of the optic nerve can give nothing else but light sensations, and the image formed on the retina is in fact nothing else but a series of light sensations. If this be so, how

then do we come to see that tangible, heavy, solid body yonder at a more or less definite distance? Solidity, bulk are not given in light sensations as such, how then are those spatial and physical characters perceived so distinctly as to assume a direct sensory character?

It cannot be ascribed to the principle of association of ideas. For the object and its distance appear at once, in one single glance, before any idea comes to the mind. Furthermore, an idea from its very nature stands out distinct and definite; it is essentially free, but the psychic elements of object and distance are not discriminated. Again, phylogenetically and ontogenetically sensation and perception precede ideation. The infant, the animal perceives objects and distance, and certainly with little or no ideation present.

In the visual perception of distance the subordinate psychic elements derived from other senses are not of an ideational character, they are of a sensory character. The eyes *sees* the distance. The eye sees distance or volume directly, because of other elements involved in the process of perception, such as the kinæsthetic sensations coming from the movements of the eyes in their adjustment to the stimulations from the external environment, also tactual, muscular and kinæsthetic sensations derived from skin, muscles, joints and articular surfaces, all synthetized in the given percept.

The subordinate psychic elements are neither of the character of pure sensations nor are they of the nature of pure ideas. What are they? They seem to be *intermediary* in character, intermediary between the nature of sensation and that of idea. Perception appears to be an intermediary process.

We may regard the same process from a hypothetical

physiological standpoint which may possibly help us in picturing the mechanism. A specific physical stimulus produces in the peripheral sense organ a definite physiological process which is transmitted to groups of neuron systems, stimulating them to activity and giving rise to specific physiological processes. Whenever these specific physiological processes are peripherally induced, the special, sensory elements arise.

If groups and systems of such psycho-physiological elements become associated and organized round a central nucleus, the result of the functioning activity of the total organic complex is a psychic compound, a percept. Whenever one of the groups is peripherally stimulated and is awakened to activity, the other elements become stimulated, and the result is the organized activity of function of all the elements, thus giving rise to the synthesis of all the psychic elements, namely the percept.

Now we should postulate some difference in the psychic state as to whether psycho-physiological elements are stimulated directly through their own appropriate sense organ or whether they are awakened to activity indirectly through other sense organs. The *direct* peripheral stimulation gives rise to psychic elements characteristic of the particular sense organ and its nervous tracts and central systems of neurons, whilst the *indirect* peripheral stimulation gives rise to psychic elements whose pure and real sensory character is not clearly revealed in the total psychic state or moment.

These indirectly induced sensory elements are so much colored and infused with the sensory qualities of the nuclear, sensory elements that their character and origin are transformed, and they appear not to differ in their nature from the nuclear elements.

A closer inspection however fully reveals their real nature as sensory elements, extraneous to the nuclear elements and derived from different sensory sources. The nuclear elements are *primarily* derived, in so far as they are directly initiated by the incoming peripheral stimulations, while the extra-nuclear sensory elements may be regarded as *secondarily* initiated by peripheral stimuli.

Let V be the sensory visual system, T and M tactual and sensory motor systems, A sensory auditory systems. Let V_1 be the visual sensations peripherally stimulated, T_1, M_1, A_1, the tactual motor and auditory sensations of the corresponding sensory systems. Let, further, V_2, T_2, M_2, A_2 be the psychic elements indirectly or secondarily initiated; then the percept when V_1 is the nucleus may be represented by $V_1T_2M_2A_2$.

Psychic elements primarily or secondarily peripherally initiated are not identical with ideational states. An idea or image differs qualitatively from a percept and its elements—*an image lacks sensory character. An image is more generic, while a percept is more specific.* I see that lamp-post yonder; it is a particular object rigidly limited in a particular space; not so is the image, the image of the lamp-post refers to lamp-posts in general. When I perceive an object and then try to represent it to myself, the object is not presented to consciousness in its sensory perceptual form—it is present to consciousness rather as a symbol, ideally representing perceptual experience peripherally initiated.

From an anatomical and physiological standpoint it is quite probable that ideo-motor systems are neuron organizations different from those of the sensori-motor systems. Psychopathology with its rich store of facts

seems to favor this view. As we have already pointed out there are pathological cases where the patient does not know the object on perceiving it, although he can represent it to himself, and again there are other cases where the patient cannot represent to himself the object, but he knows the object on perceiving it.

Flechsig's embryological studies go further to show that the sensory centers are different from the associative centers which do not stand in direct relation with the external environment and appear rather late in the course of ontogenetic development. The view often maintained that the same sensory structures underlie both sensory and ideational processes does not seem to be probable in the light of recent research.

The activity of the sensori-motor neuron systems does not give rise to ideas, but to psychic states essentially sensory in character. In the case of the percept the subordinate psychic elements entering into the synthesis of perceptual psychic compounds are of a sensory nature; they only differ from pure sensations in so far as they are not directly peripherally initiated, but centrally, or truer to say, *indirectly peripherally* initiated, and as such occupy an intermediary state between sensation and ideation. In other words, the subordinate perceptual elements may be regarded as *reflex* in character, as being of the nature of *secondary sensations*.

The nature of illusions and hallucinations is more or less cleared up from this standpoint, and the latter in its turn may be still further illustrated and confirmed by the facts coming from the domain of abnormal mental life. Let us take a series of cases of abnormal or fallacious perception. In looking through the stereoscope the two plane dissimilar views are combined and give the illu-

sion of a solid object. Here the illusion is due to imitation of external conditions; the external stimulations that give rise to the perception of a solid object are here closely reproduced. The visual sensory elements are stimulated and the rest of the groups are reproduced, associated sensory elements or secondary sensations emerge, and perceptual synthesis arises.

The illusions to which in my student days I attracted Professor Münsterberg's attention are of a similar character. If each eye looks through a separate tube, and if the other ends of the tubes are brought together, the openings of the tubes coincide, appearing as one, and the eye appears to look through one tube only. If now only one tube is looked through, and the other eye glides along the surface of the tube, the opening of the tube appears outside, removed and raised higher than the real opening; the opening appearing to be directly seen not by the eye which looks through the tube, but by the other eye that does not look through. The illusion can be made more striking by putting the hand where the illusory opening appears and *the hand appears to be pierced by a round hole.*

The conditions are such that the convergence of the eyes displaces the lighted-up opening towards the field of vision of the open eye not inclosed in the dark tube. Similarly when closing one eye and having the other wide open we press the closed eye sideways towards the nasal side, the round phosphene seems to be projected into the field of vision of the other eye, and the phosphene really appearing in the field of the closed eye as one can convince oneself by closing the open eye, appears to be directly seen by the open eye.

In all these experiments the arrangement is such as

to imitate conditions under which other percepts normally arise, and the result is the reproduction of those specific states of perception. To take another example, in a fog or in the darkness we may take a tree for a man or mistake a rope for a snake. Similarly, in the shape of clouds and blots we can often see different figures. The illusion here is rather due to the vagueness of the cue or of the sensory nucleus, the character of which may vary with distance or with the intensity of light.

In mental derangements, such as in the different forms of insanity or of psychopathic functional diseases, in hypnotic, post-hypnotic and hypnoidic states the object is perceived as different, independent of external conditions, such, for instance, as convergence, divergence, light, distance. A chair may be perceived as a tiger no matter how the visual axis is placed or what the distance be, or how intense the light is. Certain definite visual sensations may be correctly perceived, but on account of dissociation in psychopathic states, sensations different from the customary, associated secondary sensations are aroused which in turn awaken different secondary sensations in other sensori-motor systems of neurons, and the result is a different psychic compound, an illusion or a hallucination.

In the preceding cases the nuclear elements obscured in different ways by the subordinate elements are nevertheless present in consciousness and still form the nucleus of the percept into which other subordinate elements enter as constituents, and give rise to fallacious perception. Should now the nuclear elements themselves, on account of inattention or of their minimal sensory intensity, or what is still more often the case, on

account of states of dissociation, should such nuclear elements be left out of consciousness or remain in the subconsciousness, as in dissociative states, then the fallacious percept stands out clear and distinct in the light of consciousness, and a fully developed hallucination results.

Sensory elements which themselves may remain unperceived stimulate other sensory elements that give rise to a perceptual compound which is entirely of a secondary sensory character. The hallucinatory percept does not contain the primary sensations aroused by the stimulus; it consists of secondary sensory elements and as such a hallucination may be regarded as a *secondary percept. Hallucinations are of the nature of secondary sensations.*

The simplest state of hallucination is found in the phenomena of synæsthesia or in the phenomena of secondary sensations, such as light-phonisms, sound-photisms, etc., when one sensation, instead of giving rise to a subsequent idea, awakens instead a qualitatively different sensation derived from another sense organ—a color or letter arousing a certain sound, definite sounds arousing certain colors, and so on. When a certain stimulus makes an impression on a peripheral sense organ and gives rise to secondary sensations, we really have a hallucination, but in its simplest form. He who on seeing the letter *A*, for instance, also hears a sound or feels a prick, or a touch may be regarded as having a hallucination.

In this simple form we can possibly more clearly discriminate the character of hallucination. When on seeing letter *A*, we hear a sound, the indirectly aroused auditory, sensory elements do not contain the primary sensory visual elements. In the secondary sensation or in the more complex state of perception of secondary character the primary elements are left out. A stimulus may

arouse sensory elements in one sensory center, which in its turn may stimulate systems of sensory elements in other sensory centers, thus giving rise to a group of secondary sensations synthetized into a percept, while the original sensation with its nuclear sensory elements may remain in the background. Such a physiological stimulus may often be not an external physical stimulus, but a pathological process going on either in the peripheral sense organ from which the nuclear sensory elements arise or in the sense organs from which the secondary sensory elements originate.

Let S be the stimulus and V_1 the visual sensory elements and $A_2T_2M_2$ the secondary sensory elements, then V_1 may be dissociated, while the secondary sensory elements $A_2T_2M_2$ stand out alone in consciousness as a secondary percept or hallucination.

It may again be that not only the primary but also the appropriate system of secondary elements may be left out of consciousness, while *associated* systems of secondary elements may be awakened and stand out fully in the light of consciousness, thus giving rise to a hallucination removed in its character from the original primary elements with their organized secondary elements.

The preparedness of remote secondary groups may often be determined by the type of mental structure. Hallucinations of visions, or of voices, or of movements will predominate, according as the type of mental structure is visual, audile, or motile. The mental type plays no doubt, a very important part in the formation of illusions and hallucinations. In the insane, auditory illusions and hallucinations predominate in the audiles; and while, on the one hand, paranoiacs are often audiles, on

the other hand, audiles are inclined to paranoia. In hypnosis hallucinations become more easily realized, if they are adapted to the mental type of the subject.

Preparedness and subexcitement of ideo-motor groups with which the secondary sensory groups are associated also form an important factor in the final determination of the character of the illusion or hallucination. This is rather of an indirect character. It is not that the ideo-motor groups themselves directly enter into the structure of fallacious perception, but they often may determine which of the remote secondary sensory groups should be stimulated to activity. Groups of elements are more easily brought into active functioning, the greater the activity of the elements with which they are associated, the course of group excitation being, so to say, in the direction of least resistance.

Pathological processes going on in one sense organ may sometimes give rise to secondary sensory elements belonging to other sense organs especially when favored by general states of dissociation; in fact, we may say that from our point of view a state of dissociation is an indispensable condition to the formation of hallucination.

The following cases may be taken as clear typical instances. In one of the cases the patient saw spirits and regarded them as ghosts of her deceased daughters. On examination her eyes were found to be normal in all respects. The patient saw the spirits even when her eyes were shut, and furthermore the hallucinations were not in the least affected even when her eyes were injected with atropine.

When, however, the ears were examined a pathological process of old standing was discovered. Now when auditory stimuli were applied to the ear, the hallu-

cinations were at once strongly affected, the spirits multiplied in number. This increase of spirits ceased as soon as the auditory stimuli were removed. A closer examination revealed the fact that the patient was greatly affected by the loss of a daughter. The pathological process served as the stimulus, while the excitability of the ideo-motor systems along with the general state of dissociation determined the nervous processes, initiated in the ear in the direction of the sensory visual systems and gave rise to secondary sensory elements, formed in the hallucinatory percept of ghosts and spirits resembling the patient's daughter. The aural pathological process itself remained in the background of consciousness and was unknown to the patient.

A similar case is that of a paranoiac who had visual hallucinations of spirits, hobgoblins, and saints. The organs of sight and hearing were found normal, but a pathological state was found in his scalp, especially in the sensibility of the muscles of the neck. An inclination of his head in any direction caused him to see the spirits and hear their voices.

In another case of mine, definite auditory stimuli, such as the singing of birds brought about hypnoidic states which are really complex states of hallucinations. In another case, in a female paranoiac with clearly defined auditory hallucinations, a similar state was revealed. The patient heard voices not through the ear, but through a spot located just over the region of the Fallopian tubes. Examination of the spot revealed tenderness and painfulness to pressure. The hallucinations, which were of a sexual character, became exacerbated during the menstrual period.

Similarly in another case under investigation the au-

ditory hallucinations were shown to be intimately connected with phenomena of unconscious phonation and with frequent earaches, with a limitation of the field of vision due to an error of refraction which, when corrected by eye glasses, modified the auditory hallucinations, the latter finally becoming dissolved. More cases of similar nature could be adduced, but the ones referred to are sufficient, and extreme as they are, they bring out clearly the secondary reflex character of hallucinations. *Hallucinations are essentially secondary percepts.*

Hallucinations are frequently due to peripheral processes, pathological or otherwise, occurring under conditions of dissociation, within the same sense organ, but the reflex hallucinations originating in other sense organs bring more clearly to light the secondary nature of hallucinations. The contention generally maintained that there are hallucinations independent of peripheral sources, or hallucinations of 'purely central origin' which some even regard as supernormal experiences is highly dubious. As far as directly observed facts go, whether they be normal or abnormal, there is little to justify the central point of view.

Like percepts, hallucinations are peripheral in character, and are only in so far central as *peripherally* initiated secondary sensations are concerned. Hallucinations are of peripheral origin, and may be regarded as complex cases of secondary sensations with the original primary sensation dissociated from or left in the background of consciousness.

If, however, *hallucination is abnormal perception, perception is normal hallucination.* If a hallucination is a secondary compound with the primary sensations ABSENT, a percept, in so far as it consists of secondary

sensory elements, is a hallucination with the primary sensations PRESENT. Normal perception, illusion and hallucination have the same underlying process and as such may be arranged in a continuous series, according to presence or absence of the primary sensory elements.

CHAPTER XVI

HALLUCINATION, DISSOCIATION, AND DREAMS

A PERIPHERAL process often of a pathological nature, a state of dissociation and a subexcitement of secondary sensory and ideo-motor elements constitute the main conditions of hallucinations. The peripheral pathological process and the state of dissociation are requisite to the formation of the hallucinatory percept, while the content of such percepts is given by the systems of sensori-motor and ideo-motor elements. A peripheral process alone, even if it be pathological in character, does not give rise to hallucinations.

Similarly a state of dissociation by itself or a state of subexcitement of secondary and representative elements cannot give rise to hallucinations. It is only when these conditions coöperate, it is only then that hallucinations arise. The state of dissociation and that of subexcitement of 'central' systems may be regarded as the 'central' conditions of hallucinations, while the peripheral process is the factor that supplies to the systems the primary, sensory, nuclear elements round which the secondary elements crystallize and form a hallucination.

States of dissociation, provided the other conditions are present, are preëminently favorable to the formation of hallucinatory percepts. In sleep, when the mind is immersed in darkness, isolated isles of systems may stand out of this general night of consciousness and give rise to dreams of various degrees of intensity.

Dreams are sleep hallucinations, while hallucinations are waking dreams. Both hallucinations and dreams develop under the same conditions of dissociation.

The nature of dreams and hallucinations is essentially the same. An isolated dissociated system of secondary sensory and representative elements predisposed to function becomes awakened by a special peripheral stimulus or by a summation of series of stimulations, and gives rise to hallucinations or dreams, according to the general state of consciousness, waking or sleeping. This process can be clearly traced in all hypnagogic and hypnapagogic dream hallucinations.

The hallucination of the comparatively waking state stands out alone, it remains more or less isolated and becomes obliterated by the general inrushing flood of peripheral sensations and perceptions of the waking consciousness. The dream is made up of a series of hallucinations going sometimes to form a complicated hallucination, expanded into a whole life history. From this standpoint we may say that a hallucination is an abbreviated dream, while a dream is an expanded hallucination.

In sleep the primary sensory nucleus of the dream hallucination is supplied by the peripheral processes coming either from external stimuli or from internal stimulations, from changes taking place in the organism. The psychophysiological threshold is raised in sleep, the resistance to the entrance of sense impressions is increased, the rise being proportionate to the depth of the sleep state. The peripheral sensory channels are closed to external stimulations.

External stimuli, however, assail the peripheral sense organs from all sides and now and then, whether on ac-

count of the intensity of the stimulus or of the summation of a series of stimulations or of the temporary rise of the sleep level and consequent fall of the threshold and decrease of resistance to the influence of external stimuli, sense impressions force an entrance and awaken to activity some slightly slumbering systems thus giving rise to the dream hallucination. Under such conditions the sense impressions have but small chance to awaken their appropriate systems, and hence they become incorporated into systems with the lowest psychophysiological threshold, thus giving rise to the phantastic combinations characteristic of dream life.*

Sense impressions form the nucleus around which cluster systems of secondary sensations and representations, all tinged with the sensory color derived from the original primary, nuclear sensory elements. The systems of secondary sensory and representative elements once awakened may go on expanding and developing, awakening other groups and systems, assimilating them or being assimilated by them as much as the nature of their content permits and being further reinforced by incoming stimulations.

During the whole course of its expansion the aroused groups and systems maintain their sensory or rather their perceptual character. For, if a system is once awakened to activity, the threshold, the resistance to incoming stimulations is lowered, and many more sense impressions gain access to the functioning systems and become incorporated and assimilated. This assimilation of chance systems and sense-impressions

*Recent speculations about the "interpretation" and "meaning" of dreams are unscientific, arbitrary, and meaningless. The "Traumdeutung" is nothing but a play on words, an ingenious play of Talmudic, cabalistic puerility and childish scholasticism.

often gives birth to highly elaborated phantastic dreams and visions.

Systems awakened by stimuli must have some relation of familiarity to the nuclear sense impressions. If perception is to take place, there must be some congruence between the sense impressions and the stimulated systems. Only on such conditions can assimilation take place. Similarly the awakened systems in sleep assimilate congruent sense impressions, the latter becoming so transformed as to fit the system, and the system is modified by the incoming impressions.

This congruence in the dream state is often strained and remote and consequently often of a phantastic and irrelevant character. Thus the taking off a plaster may give rise to a dream of being skinned alive, or of being scalped by an Indian. A change to an easier position and a freer respiration may generate a dream of flying. In one of my experiments of dream hallucination the uncovering of the feet in a cold room gave rise to the dream of walking on the frozen surface of a river, the impeded respiration awakening the feeling of fear of falling into the water. In a great number of experiments and dreams carried on by me for years, I have been enabled *to trace dreams to sensory changes and stimulations.*

The internal sensations such as arise from the different functions of the bodily organs are important factors in the generation of dream hallucinations. Every one knows the fact that indigestion often gives rise to nightmares and unpleasant dreams, but not many realize the fact that cœnæsthetic sensations, sensations that come from our internal organs play an important rôle in the production of dream hallucina-

tions. The circulation of the blood, the secretion of the various glands, the peristaltic movement of the small intestines, the action of the stomach, the changes in the muscles, the metabolism going on in the various organs of the body, in the cells of the organism, all these give rise to sensations which, though obscure and confused, go to make up the general sense of organic life activity.*

This sense of cœnæsthesis may, in fact, be regarded as the basis of our physical being or of our physical personality. A change of this sense is frequently an important factor in the formation of delusions, when mental life becomes dissociated and disaggregated. Hypoæsthesia or anæsthesia of the leg, for instance, may form the nucleus for the formation of the delusion that the leg is made of glass or of putty or is totally gone. Anæsthesia of the body or of the internal organs may develop the delusion of being dead, the patient asking to be buried.

Similar conditions are also present in dream life. *Toxic and antitoxic material, accumulation of waste products, various drugs, gases and injections of various poisons have in my experiments given rise to hallucinatory dream states.* Affection of special organs have given rise to nightmares. Changes of cœnæsthesis play no doubt an important rôle in the activity of the dream consciousness. Changes in the various component elements that go to make up the obscure but highly com-

*In another work I shall take up the study of the dream consciousness more in detail, meanwhile I must strongly protest against the flood of psychoanalytic literature about the supposed psychology of dreams. Psychoanalysis in general and psychoanalysis of dreams in particular display not only arrogance of the ignorant *parvenu* in psychology, but also manifest a total incapacity of comprehension of psychological problems.

plex life of organic sensibility affect profoundly the rich exuberant play of the dream consciousness.

Since the channels to external stimulations are closed, the cœnæsthetic sensations that form the obscure basis of waking consciousness become the sole possessors and guides of whatever mental activity is present in sleep. These internal sensations are woven by the dream consciousness into phantastic images of all shapes and forms.

The dream consciousness presents many characteristics found in states of mental dissociation and disintegration. Moral tone is lowered, attention is greatly reduced, logical thought is enfeebled and the sensori-motor and ideo-motor elements are thrown out of gear, often resulting in the formation of illusions, hallucinations, and delusions. In the dream state there is present the mental degradation of dementia, the sordid delusions of hypochondria and melancholia, the delirious states of mania, the delusions of grandeur of general paralysis, and even the persistent systematized delusions of paranoia.

The dream consciousness is extremely unstable, it forms no definite type of mental disintegration and has no determinate course, it is extremely fluctuating in its states, and its background is usually shifting ceaselessly. From this standpoint it may be said that the dream consciousness is a normal form of mental alienation and that mental alienation is an abnormal form of dream consciousness.

A very characteristic diary brought to my notice in which a retrospective and introspective account is given by a patient in the normal condition of the experiences lived through in the state of mental

aberration opens with the suggestive title: *Memories of my Dream Life* and with the following interesting introductory remarks:

"Where shall I commence? How shall I begin to recall and record this to me mysterious life I have been living? So beautiful, so strange, and in some way so terrible. Yet I would not forget, for it seems as though I must have been in communication with intelligences above—spirits of the air, if it were possible.

"When did it commence? How long has it been with me? are questions I cannot solve. For weeks before coming to the hospital I must have been living this 'ideal life' as in an 'ideal world.' I have jotted down what I have thought, though they are not one hundredth part of the thoughts which passed through my mind during this strange time of dreaming."

In my cases of katatonia *the frightful dreams of the year preceding the disease became hallucinations of the maniacal stages, and appeared again as dreams during convalescence.* The dreamer dreams with his eyes closed, the insane dream with their eyes open.

In both the dreamers and the insane the disaggregated states under the influence of external and especially of internal stimuli give rise to illusions, hallucinations and delusions. Dissociated states grouped round nuclei of primary sensations form the internal organizations of hallucinations and delusions so often characteristic of dream life and insanity.

Cœnæsthetic sensations are important agents in the formation of insane delusions and hallucinations, they are so many fermentation nuclei among masses of dissociated states. Irritation of the genitalia may in the insane awaken hallucinations and de-

lusions of a sexual character; constipation and heaviness in the intestinal tract may generate delusions and hallucinations of rats and pigs in the stomach; rumbling in the stomach and the intestines may give rise to the delusions and hallucinations of devils in the body or of electric discharges of powerful batteries, placed in the abdomen.

The difference between the waking life of the insane and that of dream consciousness is the mode of activity, the dream consciousness works in images, in secondary sensory percepts, while in the insane mind the activity is largely representative. This difference is due to greater dissociation present in dream consciousness. The awakened dissociated systems in dream life become tinged with a perceptual sensory color by the process of absorption and assimilation of all the incoming sense impressions.

Pathological states of rapid mental dissociation, such as the acute states of maniacal excitement or in states of psychopathic functional dissociation, such as the *"Dämmerzustände"* of psychic epilepsy and other states of functional psychosis, closely approximate to the condition of dream consciousness, though the former are more stable and far more consistent, being narrowed to the active functioning of definite mental systems, conditions rarely to be met with in dream states.

The dream consciousness lacks unity of logical thought, certainly fails in critical judgment, and is sometimes indifferent to immoral situations and acts. The credulity of dream consciousness is well known to every active dreamer. Changes of time, place, and of objects are often instantaneous, and the most incongruent situations as well as transformations of personality

are placidly and credulously accepted. The dream consciousness is entirely at the mercy of incoming sense impressions which spin the dream experience regardless of truth and reality and steadiness of logical purpose and moral ideals of the race. From this standpoint it may be claimed that the dream consciousness is to some extent a reversion to the earliest forms of mental life, when the race was as yet undisciplined by the accumulated experience of ages of social life.

The teleological aspect of the dream consciousness may possibly lie in the fact suggested by some that the many trains of thought started in the activity of waking consciousness and arrested by the selective thought and logic of things and events of waking life find their vent and completion in the activity of dream consciousness. This vent relieves us from the high pressure of suppressed thought and makes it easier to sustain the rigid selection of sequences of mental states required by the struggle of existence and social life in our adjustments to the conditions of external environment.

This view, however, is not correct. For the dream consciousness follows not only along the lines of thoughts started in waking life, but more often forms new lines of associations giving rise to highly dramatic situations bearing no relation whatever to the interests of waking life, and far from relieving waking thought impedes and depresses it, since the mind feels unrefreshed by the sleep and in many cases serious mental troubles arise, due to the disturbing influence of active dreams on the course of waking thought.

It is more likely that there is little teleology to dream life, and if any teleology there be, it may consist in the freedom and ease in which the mind finds itself in the

dream state, fettered as the mind is by the rigid relations of the external environment. *In dream life the routine of waking life is interrupted and new associations are formed.*

This possibility of forming new associations and thus breaking through the routine of life, a possibility maintained and fostered by the dream consciousness, might have possibly proved of some consequence to the human race. The dream consciousness may thus be regarded as an important factor in the progress of human thought, as an agent in the breaking up of habits of thought, due to the routine of life, calling the attention of man, absorbed as he is with the interests and requirements of the needs of his physical world, to another life existence and strange universe of reality. *It is out of the activity of dream consciousness that the concept of an independent spiritual life has developed. In sleep and dreams man breaks away from the bondage of the interests of this world.*

CHAPTER XVII

HALLUCINATION, DREAMS, AND REALITY

THE sense of reality and the belief in the external existence of the hallucinatory objects are quite strong in hallucinations and in some of the more vivid and intense dream states. In order to explain this seemingly anomalous sense of reality, it may be well to revert to our general principle of subsuming both the normal and the abnormal under the same general laws and processes.

Although the abnormal is of the highest importance in revealing new relations which the customary and habitual normal seems to hide, as found, for instance, in the growth and development of physiology, largely due to pathological research, still we must clearly remember that from a strictly scientific standpoint the normal and abnormal are but teleological concepts which are of importance for the practical purposes of our habitual life activity and possibly for classification of various types of phenomena, but which science is to reduce to the same laws and processes. The abnormal is the normal out of place.

In mental life as in the phenomena of life in general the atypical, or the variation, helps to explain the typical, the normal, and the latter in its turn explains the atypical, the abnormal. We may therefore turn to the criterion of the normal sense of reality and validity of experience as explaining the same relations in abnormal mental life and the latter in its turn may throw light on

the "reality and validity" of "normal" experience. A brief review will suffice for our purpose. It may look as if we attempt to make an excursion into a domain not belonging to normal or abnormal psychology proper, but to epistemology. This may be so, but the nature of our subject brings us so closely to this problem that a brief discussion may help us to see the facts in a clearer light.

Abnormal psychology with its various forms of mental aberration, such as are to be found in the phenomena of insanity, functional psychosis, hallucination, delusion, somnambulic states, hypnoidic states, is so intimately connected with aberrations of the 'sense of reality and validity' of experience that not only the abnormal psychologist, but also the clinician must take it into account from a purely practical standpoint. We shall view the problem only in so far as it directly concerns and illustrates the general subject of our discussion, namely hallucination and illusion, or fallacious perception.

The objective reality of the physical world is sometimes defined, and apparently with best of reasons, as social experience, as experience common to ourselves and our fellow men, as experience which men share in common. This view, however, of 'external reality' seems in contradistinction to the psychic experience which is essentially of an individual character. The tree yonder can be seen by everyone who possesses eyes, but my perception of the tree, or my idea of it, can only be experienced by myself. It may be said that this difference between the physical object and psychic state is a valid and valuable one. It is, however, neither general enough, nor specific enough.

For on the one hand it may be claimed that from a

more general philosophical standpoint even the physical object belongs ultimately to the individual only, and on the other hand, it may be claimed that psychic experience is communicated to our fellow men not only in terms of the physical object, but far more often in terms drawn directly from our mental life. Neither the physicist nor the psychologist will be quite satisfied with this point of view as both physical objects and psychic objects are entirely emptied of their specific contents and must remain at best in the dubious regions of epistemology.

Still this social aspect of the physical object is significant and valid and is even used by the psychiatric clinician as a practical standard in the valuation of abnormal mental life in general and of insanity in particular. It may, therefore, be of value even if we do not agree with the extreme way in which this view is sometimes put.

It is true that at the first glance we cannot help being struck by the import of the common or social aspect of external reality. We are well assured of the existence and presence of an external object, if we have the assurance of our fellow-beings, and what is accepted by our fellow men assumes the dignity and authority of actuality. A fact is regarded as existing beyond the shadow of any dispute, if every one can verify it in his own experience. The categorical necessity of our modern science rests entirely on this principle of validity: The social object is the valid object.

This criterion of validity of the external object stands out specially clear and distinct in our standard of abnormal mental life. A belief is regarded as insane and delusional, if it is in opposition to social beliefs and ex-

perience, and is emphatically rejected by all other men. An object is regarded as illusory or hallucinatory, if it is treated as non-existent by other people; a desire, an action is considered immoral, if it is spurned by our neighbors. The real object is the social object, the valid belief is the social belief, and the social will is the moral will. The individual object, the individual belief, the individual will are treated as insane.

One can not help noticing the semblance of truth in the assertions of those pathological anthropologists who put genius in the same category with insanity. What is social is alone true, valid and real, the individual is false, non-existent. The individual can buy the reality and truth of his being on condition of becoming social. Sociality is verity.

Let us now, however, try to break through, if for a moment only, the traditions of social *régime* with its criteria of social reality and validity. When being pricked or getting a blow, or when cut or scratched, along with the experience of the sensation, the experience of the external stimulus is also given. In looking out of the window and seeing the tree with its green leaves moving in the wind, along with the perception of sensory elements, primary and secondary, the external existence of the object tree is also given. Similarly in listening to the sounds of a familiar and dear voice and listening to the words as they form into phrases and sentences is not the sense of reality of the external object given along with the series of sound sensations? Sensation carries along with it the sense, the reality of its stimulus. It is not that the sense of reality is different from the sensation, it is given in the sensation itself.

Similarly the percept and the sense of reality of the

external object are not two different things; they are given together in the same process of perception and are identical. The percept tree is the perception of the reality of the objective tree yonder. The sensory process is also the process of the sense of reality. As Spinoza puts it in his *Ethics*: "If the human body is affected in a manner which involves the nature of any external body, the human mind will regard the said external body as actually existing." In seeing or perceiving the chair yonder we do not perceive it as real, because of its social or common aspect—the reality of its existence is given directly in the sensory processes of the percept itself. Sensory elements involve the reality and existence of their stimuli; the percept involves the existence of the perceived objective content.

The sense of reality of the external stimulus or object is strengthened by association of the original sensory systems with other sensory systems, and the intensity rises in proportion to the number of systems of sensory elements, brought into relation with the functioning sensory system. If on perceiving an object, we wish still further to assure ourselves of its reality, we verify it by means of other sense organs. If one sees an apple and wishes still further to assure himself of the real presence of the object, he goes to it and examines it with his other sense organs, he touches it, presses it, bites it, tastes it.

Kinæsthetic elements, being the most important in adaptations and reactions to the stimuli coming from the external environment, are possibly of all sensory elements the ones that give the keenest and most intense form of sense reality. Facts warrant us to assert with some show of probability that the sense of reality

is chiefly centered in the sensori-motor or kinæsthetic elements which serve as nuclei for other sensory elements.

Whether this be correct or not, it remains true that the sense of reality is given directly by sensory elements and their combinations and organizations. The more systems of sensory elements are pressed into service, the stronger is the sense of reality and the more assured is the reaction to the stimuli of the external environment.

In the evolutionary process of man's adaptation to his environment he becomes extended in being and grows more developed, because of his social relations with other men. Man presses into active service the systems of sensory elements of his fellow beings. Adaptations and hence successful reactions to the external environment are now more assured, and the sense of reality is still further emphasized and intensified.

Throughout the course of intensification of the sense of reality the principle remains unchanged in nature. The sense of reality is given by and consists in nothing else but the sensory elements.

Social experience may be regarded as more real or as giving a more intense sense of reality, because of the greater number of sensory systems involved, but an object is not felt as external and real, because of its social aspect merely, the sensory aspect is by far the more fundamental. If one's perception of the house yonder is of a purely "individual" character, not shared by his fellow men and even emphatically denied by them, the visual perception, as such, still directly perceives it as real, external, and physical.

Should furthermore this experience be intensified or

confirmed by all the other senses—should he be able to touch it, to press it and feel its resistance, knock against it and feel concussion and pain, and have a series of tactual and muscular sensations by walking into the perceived house and around it, and should he further have this purely 'individual' experience of all the senses each time he comes to the same spot, the perceived object would then be a real, external, physical object, and no amount of social contradiction and lack of the ear marks of community could make it less real, objective, and physical.

Epistemologically regarded, community may be sufficient for the purpose of reality; psychologically regarded, the real, existent physical object is essentially the perceived sensory object given by the 'community' of sensory elements. Sensory elements give the objective "reals."

From this digression we may turn again to the question: "What is it that makes hallucinations in general and dream hallucinations in particular appear real, objective?" The solution is given in the question itself. We have shown in our analysis that hallucinations are essentially peripheral and sensory in character and do not differ in their make-up from sensation and perception in general which furnish the very foundations of our sense of reality. Hence *hallucinations are real and objective, because of the constituent sensory elements.*

Strictly psychologically considered, percepts do not differ from hallucinations as far as process is concerned. Normal percepts differ from hallucinations mainly by the fact that the former are the habitual, the customary, confirmed by other systems of sensory elements, and that in the struggle for life, they proved the fittest to

call forth the best adapted reaction.

Dream hallucinations, like hallucinations in general, are initiated by peripheral stimulations; even the so-called "central" hallucinations are really peripheral in origin, the dream hallucinations naturally falling under the same category. The entrance of external peripheral stimulations being difficult in proportion to the depth of sleep and extent of hallucinatory dissociation, the internal sensations predominate in the functioning systems of dream life. For in sleep the activity of the internal organs, though depressed, still goes on uninterruptedly; the glands continue their function of secretion and excretion, the heart continues to contract and dilate, the blood goes on circulating through arteries and veins; the liver, the spleen, the stomach, the intestines, the lungs and other organs carry on their functions without a moment's arrest; the whole sympathetic nervous system, the vasomotor, the spinal cord, the medulla and other basal ganglia, all, contributing to the vast mass of internal sensations, can hardly be regarded as being asleep.

All these peripheral internal sensations go to form nuclei of primary sensations around which secondary sensory elements become crystallized and organized, and give rise to hallucinatory percepts—to dreams. To these must be added the external peripheral sensations coming from touch and pressure of bed clothes, from changes in the muscles, joints, ligaments, and synovial surfaces, from changes in the superficial temperature of the extremities, from chemical changes in the olfactory and gustatory organs, from summation of minimal acoustic stimulations, and above all from changes in the visual apparatus, and especially from the masses of light in the retina and macula lutea.

With the obscuration and dissociation of the mind the internal sensations along with the external peripheral minimal sensations come to the foreground of mental life. The dreaming consciousness stands in closer relation to the bodily functions than the waking consciousness, absorbed as the latter is with the intense stimulations coming from the external environment. The intense, external, peripheral sensations of waking consciousness obscures the weaker, but more constant internal sensations, as Hobbes puts it, much "as the light of the sun obscureth the light of the stars."

This intimate relation between internal sensations and dreams was clearly seen and pointed out by Aristotle: "For the movements which occur in the daytime (within the body) are, unless very great and violent, lost sight of in contrast with the waking movements, which are more impressive. In sleep the opposite takes place, for then even trifling movements seem considerable." Similarly Hobbes says: "and because the brain and nerves which are the necessary organs of sense, are so benumbed in sleep as not easily to be moved by the action of external objects, there can happen in sleep no imagination and therefore no dream, but what proceeds from the agitation of the inward parts of man's body; which inward parts for the connection they have with the brain and other organs, when they be distempered, do keep the same in motion."

Dreams sometimes reveal in phantastic and grotesque images the conditions of bodily function, conditions which the waking consciousness cannot detect, because they lie in the subconsciousness and cannot overstep the threshold of waking consciousness. It is here in the deeper regions of cœnæsthesis, that we have to look for

those "prophetic" dreams which seem to foretell some future event, some future state of the organism.

An incipient irritation of the nerve endings in the teeth, an irritation not yet felt in the waking consciousness, may become the nucleus of a dream and give rise to a dramatic vision of sitting in a dentist's chair and being operated upon, a prevision that may actually become fulfilled soon after. Incipient organic affections, not yet felt in the waking consciousness, may become the starting point of a highly dramatic prophetic dream. Dreams of such a "veridical" character often appear highly mysterious and their fulfilled prophecy seems nothing short of the miraculous and supernatural. There are many such cases on record, but the following may be regarded as typical:

A lady, a relative of mine, had a vivid vision which proved "veridical," and seemingly could only be accounted for on supernatural grounds. One evening, on being left in a room all alone, she suddenly saw the apparitions of her deceased parents. The lady became much frightened, but the parents quieted her and told her not to be afraid as they came to bring her good tidings. "You will give birth to twins, a girl and boy, name them after us, they will be strong and healthy." With this the apparitions vanished.

The lady became greatly agitated and, although she did not suspect to become a mother, still, being religious and a firm believer in spirits, she had implicit faith in the actual presence of her parents, who appeared to her in order to bring her glad tidings from another world, and naturally she even began to prepare clothes for the promised twins. As this happened in a remote country place the news of this

vision soon circulated among all the neighbors, and expectations were aroused as to the fulfillment of the prophecy. It soon became apparent that at least a portion of the prophecy was being fulfilled. The lady soon discovered that she was going to become a mother —the sceptics were somewhat confused, still they maintained their front, but they were completely silenced, when after a few months the lady gave birth to twins and that a boy and girl. The vision then did prove to be of supernatural origin.

If, however, we analyze the vision somewhat more closely, we find that it can easily be resolved into elements which admit of a perfectly natural explanation. The vision first of all occurred during the state of repose and was really a dream hallucination. Still this does not explain the fact that the hallucination appeared in such a dramatic form which turned out to be so strikingly prophetic.

On further examination of the lady's history it was found that she lost both her parents but a few months before the occurrence of the hallucination and that this loss deeply affected her. This mental system was an important factor in shaping the course and development of the hallucination. At the same time there was another factor at work in the elaboration of the dramatically effective dream hallucination. The lady before she gave birth to the twins was already a mother of fourteen children. It is quite possible that, although in her waking state she did not suspect of being pregnant, still in her dream state, being cut off from the intense external stimulations, she could more easily realize her condition from symptoms and changes in the internal organic sensations which now alone reigned supreme

in the dream consciousness.

These symptoms and changes in the organic sensations during the incipient stages of pregnancy could all the more be easily appreciated by the lady as she had ample experience of them before. Some special changes in the organic sensations such as the arrest of the menses, changes in the circulation, in the metabolism of the generative organs, and other changes of similar nature served as so many peripheral stimulations which, in states of dissociation, such as occur in the light states of sleep, favored the occurrence of a dream hallucination that took the form of apparitions of the deceased parents, because of the subexcitement of this particular system, and because for the time being, the system played a dominant rôle in consciousness.

Moreover, the organic changes differed greatly from the previous experiences of similar kind, and it was therefore quite natural that the dreaming consciousness should suspect the coming of twins, a circumstance which connected itself all the more closely with the formation of the dream and was no doubt a factor in the determination of the appearance of the apparitions of the parents, which in turn, helped her further to confirm the intuition that she was to be a mother of twins. All this was represented in that vivid way characteristic of dissociated states in general.*

*Another theory, based on subconscious wishes, symbolism, and on a fancifully elaborate mechanism of condensation, displacement dramatization, and secondary elaboration, finally reduces dreams to the sexual wish, dating as far back as the sexual or "bisexual" life, as the school terms it, of early childhood and infancy. Of course, this theory is not psychological, but rather teleological and metaphysical, inasmuch as the whole of psychic life activity is reduced to wish and desire of which the sexual instinct is supposed to play the sole rôle.

There is the manifest content of the dream which is directly given

by the dream and the latent content which underlines the dream activity. The four factors of the dream activity distort the dream so that the latent content cannot be recognized in the manifest content. This distortion is done by the "censor" who for the protection or self-defense of the person does not permit the subconscious latent content to come forward in dream.

As I shall discuss dreams more in detail in my forthcoming volume on the causation of mental diseases I limit myself here with a few remarks on the subject. The 'psychoanalytic' theory is unpsychological and arbitrary as it introduces a process of symbolism which by sufficient distortion and suggestion leads the whole investigation astray and puts it on the same basis with the Oneirology of ancient times and the middle ages.

Professor William James, whose introspective powers no one can call in question, in speaking to me about this theory told me that he could not find anything of this kind claimed by the theory in his own dream experience. I myself have dealt with dream experiences in my own case as well as in the case of subjects and most of my patients for about fifteen years at least and I could not find anything that should in the least substantiate this fanciful theory of what may be termed symbolic psychology.

There is no doubt that with sufficient distortion, twisting and suggestion one can get anything out of a dream. By a series of associations and suggestions long continued, aided by ingenious symbolic interpretation there is no difficulty in arriving at "sexual complexes," and then fix the subject's or patient's attention on them. It is the easiest thing to do with suggestible people.

I may add that the view of "dream symbolism" is a psychological fallacy. The fallacy is the confusion of what is understood by symbolism with the associative activity of the dream consciousness. Thus one writer tell us there is no doubt of the presence of symbolism in dreams. When we hear in our sleep the singing of birds we may dream of hearing an orchestra. Now an orchestra is not at all a symbol of birds. A symbol is the use of a certain definite image indicating the essence and meaning of a complicated psychic activity coming from another sphere of mental life. Even the psycho-analytic enthusiasts would hardly regard the above example as one of symbolism. Still fundamentally there is the same fallacy present in all the works on psycho-analysis and, that is, the identification and confusion of the associative image activity characteristic of the dream consciousness with the widely different mental activity of symbolization which is essentially universal and abstract, and utilizes the object or the percept as the embodiment of its highly abstract meaning.

CHAPTER XVIII

THE VIVIDNESS OF HALLUCINATIONS AND DREAMS

STATES of dissociation, light sleep, and especially the intermediary states occurring in the course of falling into deep sleep or coming out of it are favorable to the formation of hallucinations. Such conditions occur in abnormal mental states, in hypnosis, in somnambulism, in hypnoidal and hypnoidic states, in the so-called psychic equivalents of epilepsy, in pure psychic epilepsy, and, generally, in states of functional psychosis. In the intermediary states between waking and sleeping, dissociated systems awake and become accessible to the influence of external stimuli.

This is clearly shown in the hypnagogic hallucinations, as well as in the frequent dreams often taking place in the lighter sleep states usually before waking. I have often observed in myself, when being fatigued and becoming drowsy and closing my eyes, how fast phantoms and scenes flit before the mental gaze, most of them being formed by the flitting masses of light in the field of vision. Often in closing my eyes and keeping quiet, so as to become somewhat drowsy, and watching the field of vision, not directly, but, so to say, from the corner of the eye, animals, figures, faces, can be seen forming and dissolving into mist. These have an important influence in the guidance of the mental content of the dream consciousness.

These dream phantoms can be directly traced to

specks of light and masses of color, coming from the retina and especially from the macula lutea. In many psychopathic cases, not only vision, but also sounds and voices are experienced as in some of my cases that have hypnagogic hallucinations of voices. The dimly lighted up regions that lie on the borderland of sleep and waking states are peopled with phantoms, ghosts, and apparitions.

Statistics seem to confirm this point of view, since about 50 per cent. of cases of hallucinations may be classed as 'borderland hallucinations.' Some recent critics in this field of inquiry strongly favor the view that hallucinations occur in dream states, hallucinations being but vivid dreams, the percipient not being conscious of having fallen asleep. This view is not new, it is favored by Hobbes. 'The most difficult discerning,' Hobbes tells us, "of a man's dream from his waking thoughts is then when by some accident we observe not that we have slept."

Many cases no doubt admit of such an explanation. I myself had an experience of such a character. While sitting and studying one evening, I felt myself suddenly transported into my father's house and looking out of the window, seeing the scenery characteristic of the locality and hearing the voices of my parents in the next room, but I could not discriminate the words. The vision was so real that I was surprised to find myself again at my book and in a place hundreds of miles away from home whither my hallucinatory state had so suddenly transported me. The hallucination was so strong and real that had I not critically analyzed the conditions of its occurrence I should have been fully certain that the hallucination appeared

in the waking state.

As a matter of fact, I was fatigued from my studies and dropped off. The actual surroundings, the room, the table, the book, the voices of my friends present, all disappeared from my view during the intermediary state, and when I came out of it I gave a start in realizing once more the actual situation.

According to records, hallucinations take place when the percipient is in bed, just after retiring, or about to wake up, or after waking. The percipient is really asleep, only he is not aware of it, so brief is the state and so intense and vivid is the hallucination. It may, therefore, be maintained with some show of truth that *hallucinations are dreams and take place in sleep states.*

We must guard, however, against carrying a generalization too far. This contention that hallucinations occur in dissociated dream states is somewhat overstated. It is true that hallucinations require states of dissociation, but this does not necessarily mean sleep states. Not all states of dissociation are dream states taking place in sleep, although it may be safely asserted that all dissociative states have many traits in common and are at bottom of the same nature. Hallucinations and dreams may be analogous, may be of the same structure requiring the same general conditions, but it does not for that reason follow that they occur in the same states, in sleep states.

Dissociation with consequent hallucinations may also take place in waking states. Those who have studied hallucinations in different forms of mental diseases know that most of the hallucinations occur under widely different conditions, and they further know that it is

precisely in the waking states that hallucinations are most commonly present, while in the sleeping states they are more frequently absent. Insanity may be *compared* with dream states, but they are by no means *identical.* The important condition requisite for the occurrence of hallucination is *dissociation,* and this condition often occurs in waking states, such as the hallucinations found in many forms of insanity, as for instance paranoia, hebephrenia, katatonia, general paralysis and other states of mental aberration.

Even hypnotic and post-hypnotic hallucinations can hardly be claimed to have been really induced in dream states. They who have devoted time and labor to hypnosis know that the hypnotic state can by no means be identified with sleep, and that in the very deepest stages of hypnosis the subject is to all intents and purposes fully awake; he is full of activity, his eyes are open, his senses are on the alert —he is far more awake to external stimuli than even in his normal state. The mind is active and the subject carries on long trains of reasoning, argumentations and discussions with the people around him; in short, the subject in the deep somnambulic state is in a condition the very opposite from that of the sleeping state. *Hallucinations occur both in the waking and sleeping states and require dissociation as an indispensable condition.*

If we inspect more closely the relation of the stimulus to the hallucination, especially to the dream hallucination, we find that the intensity of the content is disproportionate to the intensity of the initiating stimulus, to the peripheral sense impression. A comparatively slight stimulation often gives rise to a dream

of a highly dramatic character. This exaggerated character of the dream hallucination is well known. Thus a prick of a pin may give rise to a dream of being attacked by robbers, and finally being run through by a thrust of a dagger. The application of a warm bottle to the feet may develop a dream of ascending a volcano and walking on molten lava, while a cold stimulus may give rise to a dream of participating in a dangerous expedition to the North Pole. Pain in the head, impeded respiration and pressure in the region of the neck may develop, as in the case of a friend of mine, the horrible dream of being dragged into a narrow dungeon and then beheaded.

To explain this dream exaggeration a theory is advanced based on dissociation. It is claimed by James that dissociation tends to convert the physiological "ideational currents" into sensory "currents" and thus intensify and exaggerate the psychic states.

Before discussing the theory it may not be amiss to examine the facts which the theory is called to explain. It is questionable whether the general relation of dream stimulus is quite correctly stated. It appears that the generalization is stated somewhat in the form of the well-known question: Why do great rivers flow by great cities? It is by no means generally true that the characteristic of dream consciousness is to exaggerate stimuli received and work them up to a pitch so as to convert "ideational into sensory currents." The relation is far simpler.

The dream does not necessarily exaggerate incoming stimuli and make of them exciting and sensational dream hallucinations. What happens is this: the commonplace, non-exaggerated, unaffective

dreams tend to fade away almost immediately on waking, while the impressive dreams are usually remembered. I have observed a number of dreams in my own case as well as in others and have found that the number of ordinary commonplace dreams far predominates over the striking and extraordinary dreams.

Even in psychopathic cases in which subconscious dream life is often well developed, even in such states I have found in the cases which have been under my observation and experimentation that the commonplace dreams far predominate over the dramatic and extraordinary ones. The only way to convince oneself of it is to try to write down the dream immediately on waking. I find that the ordinary dream is hard to hold in memory, it is elusive and is constantly slipping away from us, a special effort of attention is requisite to hold on to it; it is usually hazy, vague, and confused.

On the whole, *the indifferent dreams really predominate, but it is only the impressive ones that remain in memory.* Even the freshness and recency of the dream do not save it from falling into oblivion. Now while commonplace and indifferent dreams are forgotten, older dreams, but more impressive, more awakening our emotions, especially emotions of fear, will be clearly and vividly remembered.

Still the fact that exaggeration and intensification of the sense impressions received by awakening a greater volume of secondary sensory elements and representations more often than in the waking state requires an explanation. This intensification is partly due to the fact that in sleep sensory impressions often enter consciousness suddenly. This brings about a shock,

awakening emotions which are conducive to a stimulation of a greater volume of secondary sensory elements and their accompanying representations. Even in the normal waking state sense impressions suddenly introduced into consciousness may cause a shock and give rise to an illusion, the object appearing as something strange and formidable.

We can often observe it in ourselves, when falling into a drowsy condition, a slight stimulus which we otherwise ignore will give us a sudden start. I often observed in myself when in a drowsy state and "dropping off" how an ordinary stimulus, such as a cough, for instance, will produce a shock, affecting the visceral organs, the feeling being somewhat similar to the condition commonly described as a "sinking sensation in the pit of the stomach;" the shock seems to reverberate all through the organism.

To this must be added another important factor, namely, the emotion aroused. When an object is perceived under conditions that do not permit its recognition or its assimilation and consequently its customary reaction, an emotion of fear, is produced. Such is the case, for instance, when some objects impress us in the dark or when we get hold in the dark of some slimy, slippery, and especially of moving objects.

These two factors often work together, inasmuch as an object suddenly introduced into consciousness is also not speedily assimilated so that the shock and emotion due to non-recognition or non-assimilation go together. Now in sleep stimuli entering into consciousness effect it in a sudden way, and from the very nature of the sleeping consciousness the external stimulation is but imperfectly assimilated; both factors,

shock and emotion, due to non-assimilation are present and sometimes give rise to a highly wrought up emotional state which is so apt to transform objects by arousing different systems of elements and at the same time to impress the memory powerfully.

It is claimed that the very fact of dissociation brings about an intensification of ideational states converting them into sensory states. Physiologically, the assumption is made by James that the sensory nerve cells can be set into activity not only by peripheral stimuli, but also by central "currents" going from center to periphery. The sensory centres are like a bucket with water, the upsetting of the bucket being likened to the upsetting of the sensory centers, giving rise to sensations. This upsetting can be affected by peripheral "currents." Small intracellular, ideational currents flow freely through the centers without upsetting them.

Now when an obstruction occurs in the sensory centers the ideational currents which otherwise flow out and disperse may accumulate, and aided by a chance activity of central character may upset the nerve cell in the same way as our bucket may be upset by the accumulation of water from the small incoming currents (like the ideational currents), when the holes and interstices through which they usually flow out are stopped up. The hypothesis, as far as explanation goes, is good enough, the drawback is that it explains too much. For it is hard to understand why intense dreams of this character do not occur more often.

Besides it is hard to realize how an idea can give rise to a sensation of any intensity by the mere agency of ideas, the sensation and its intensity being entirely a function of peripheral stimulation and consequent sense

impressions. An idea, a representation, may be very vivid, but does not become a presentation or sensation. A sensation is not an "intense" idea, nor is an idea a weak sensation.

A series of sensations arranged in ascending or descending gradation of intensity may be likened to the continuous series of the spectrum in which there is a qualitative difference from line to line, a difference that admits of no substitution. *A sensation the intensity of which is changed is a fallacious percept, an illusion.* A thunder clap perceived as a whisper, a whisper perceived as a thunder clap may be equally regarded as fallacious perception as any other change in the content of the percept. The rustling of leaves perceived as an explosion is as much of a fallacious perception as when the paranoiac, for instance, hears in it curses and threats of his enemies. *Sensations and percepts cannot change in content or intensity without giving rise to illusions or hallucinations.*

The changes that may occur in regard to sensations and percepts, without their being qualitatively changed and becoming fallacious, can only be in vividness belonging to the representative elements which cluster round the primary and secondary sensory elements. A less intense sensation may be more vividly represented than one of greater intensity. A weak sound, a pale color, a light pain may be more vividly represented than the ones the intensity of which is far greater. This vividness, however, is not at all a characteristic attribute of the sensory elements, it is rather an attribute belonging to the functioning system of representative elements into which the given sensory elements

enter as constituent nuclei. Taking all this into consideration we inevitably arrive at the conclusion that James' view of dreams is not psychologically valid.

CHAPTER XIX

VIVIDNESS, FUNCTIONAL PSYCHOSIS, AND HALLUCINATIONS

KEEPING to facts as closely as possible we may venture without much risk on the following generalization which may be regarded in the light of a working hypothesis. Just as sensory primary or secondary sensory elements vary in intensity and can be arranged in a continuous series of gradations of intensities, so do the representative elements vary in vividness and may be arranged in a continuous gradated series of vividness. *Sensory elements have intensity, but no vividness, while representative elements have vividness, but no intensity.*

Representative elements may refer to the same presentative content with different degrees of vividness. Vividness of representative elements, like intensity of sensory elements, may pass through all degrees of variation from *maximum* to *minimum*, and finally reach a vanishing point. In this respect vividness is like sense intensity, and as a matter of fact the two are usually interrelated.

Under ordinary conditions of psychic activity sensory intensity and representative vividness vary together. An intense sensation is vividly represented and a weak sensation less so, the vividness varying directly with increase or decrease of sensory intensity. This direct variation, however, is not always constant; there are conditions under which the two may part company, such,

for instance, as are found in states of distraction or in states of dissociation. Under such conditions a strong stimulation giving rise to sensory elements of great intensity may awaken representative elements of but slight vividness.

In states of distraction, as well as in various states of mental dissociation, sensations of great intensity may meet with so little vividness in the representative elements as to fall below the threshold of consciousness, they may be submerged into the twilight region of the subconscious and "not be preceived at all." From this standpoint we may say that the depth of dissociation varies inversely as the degree of vividness. When vividness is at its *minimum,* dissociation is at its *maximum,* and inversely. *Briefly stated, dissociation and vividness are inversely interrelated variables.*

Functional psychosis, the basis of which is dissociation, *may also psychologically be regarded,* according to the gravity of the psychopathic affection, *as a decrease or even loss of vividness of representative elements.* The diminution or total loss of vividness may be of different systems of representative elements, and will thus give rise to various forms of psychopathic amnesias, which play such an important rôle in functional psychosis, which in the main is a disease of representative life, consisting in a decrease of functional activity of representative elements, and which from the present point of view may be regarded as *the tendency towards a minimum of the most important attribute of ideational elements, namely, vividness.*

From this standpoint, the degree of vividness of ideational elements can no more confer on them sensory intensity than the idea of riches, however vivid, can con-

fer upon one the power of wealth. Dream hallucinations, like hallucinations in general, are sensory in character, not because of the intensive nature of the central elements or ideas, but because of the primary and secondary sensory elements present, directly and indirectly peripherally initiated, as it is in the case of all sensory and perceptive processes. Hallucinations are induced peripherally, and are started either in the same sense organ, or indirectly in some other sense organ, the secondary sensory elements form, so to say, the hypertrophied portion of the hallucinatory percept, but *they are always sensory in character and peripherally initiated.*

The more closely one investigates hallucinations, the more one learns to trace cases of supposed mysterious hallucinations to external peripheral sources. A pure central hallucination is as rare as the fabulous phoenix. A central hallucination means an unanalyzed psychic state. Whenever an analysis of such hallucinations is made, the peripheral sensory character, primary and secondary, stands out distinctly in the foreground.

In the so-called "purely central hallucination" the nuclear primary sensory elements remaining in the background of consciousness cannot easily be traced to their appropriate peripheral sense organs and their external stimuli, and they are on that account regarded as "centrally initiated." Dream hallucinations, hypnotic, hypnagogic and pseudo-hallucinations, if closely analyzed, can be clearly traced to peripheral origin,—to peripheral stimuli that give rise to primary sensory elements that form nuclei round which secondary sensory elements become organized as cytoplasm.

These so-called central hallucinations form the stumbling block of the psychologist and the psychopatholo-

gist. To account for them, the theory is commonly advanced that the irritability of the ideational centers may reach such a pitch as to give rise to intense ideational states amounting to a full-fledged sensation or perception, thus bringing about a pure central hallucination.

It is strange that such a theory should be maintained at all, and that it should gain currency. The theory does not accord with experience, its very principle disregards facts. For no matter what strength an image may attain it is still far from becoming a sensation. An image of a bell does not sound and an image of a blow does not strike. The fact is, as we have pointed out before, images or representations are qualitatively different from sensations; an image can as little be converted into a sensation as the sour taste of vinegar can be turned into the violet color of the spectrum.

Images and sensations differ fundamentally, they differ in kind and no amount of ideational activity can ever be made to become sensory in nature. A higher pitch of ideational activity will make an image more vivid, but can nowise confer upon it sensory qualities, just as all the immensity of space and infinity or eternity of time can not make them weigh as much as a grain.

A further modification of the same theory is given by those who maintain that central hallucinations are due to the irritability of the higher ideational centers from which "ideational" currents are propagated to the lower sensory centers. In other words, it is not the image that becomes by its intensity or by its vividness directly transformed into a sensation, but an intense or vivid image may give rise to a corresponding sensation without the presence of an external stimulus, or of a peripheral sensory process.

Psychologically as well as biologically regarded, the theory is untenable. For it is not in accordance with observed facts that an image, however vivid, should give rise to a corresponding sensation or percept. Were that the case the course of internal and external worlds would have become confused and confounded, man would have become the dupe of his own ideas, the world a gigantic madhouse, and the process of ideational activity would have long ago become eliminated in the struggle for existence.

From a physiological standpoint, the theory can hardly be considered, inasmuch as it is in direct opposition to the known physiological laws. Sensory excitation, ideational processes and motor reaction form, so to say, a sensori-ideo-motor arc,—the excitation going from peripheral sense organs to central systems, and thence to the muscles and glands. Now the conditions postulated by the central theory are such as to have the processes reversed. Sensory processes work upward, from periphery to center, while motor processes work downward, from center to periphery.

On the modified central theory, the sensory process in hallucinations is reversed, it goes downward instead of upward. There is not a particle of evidence for such reversal, the assumption being in contradiction to the principles of physiology. The claim of special structures for effecting such a reversal is unfounded. As far as can be ascertained, the neuron works "cellulipetally," in the direction of the sensory ganglia and central neuron systems, while the neuro-axon works "cellulifugally," that is from sensory ganglia and central neuron systems to the periphery to the muscular apparatus. There is on the other

hand not the least bit of evidence that the functions of neuron systems can be reversed in their course.

The central theory then cannot stand the test of critical examination as it is neither in accord with the facts it is called to explain, nor does it fall in line with the facts and principles of physiology. We are therefore forced to fall back on the peripheral origin of hallucinations under the condition of central dissociation. According to our theory, the origin and structure of hallucinations, of dream hallucinations as well as of pseudo-hallucinations do not differ in the least from those of normal perception, a difference unwarrantly claimed by the theories of central origin of hallucinations. *Hallucinations are peripherally initiated, hallucinations are abnormal percepts, occurring under the conditions of central dissociation with primary and secondary elements as their central nuclei.*

CHAPTER XX

DOUBLE THINKING

THE phenomena of so-called "double thinking" are extremely interesting from our point of view. The patient hears his own thoughts uttered aloud. He has the hallucination of his thoughts uttered when engaged in writing or in reading, though loud reading may check the hallucinatory voices. These hallucinatory voices may be of an imitative character and simply repeat what is spoken or read by the patient; or they may be of an anticipatory character and utter the patient's thoughts before he himself utters them.

The usual explanation of such cases is found in the theory of the so-called "overcharged centers." Where the voices follow and repeat the patient's words and phrases, it is assumed that the auditory centers are highly irritable and overcharged so that stimulations from other centers bring about a discharge into the "ideational" auditory centers and auditory hallucinations result. In the case of reading, for instance, the visual image of the word awakens also an auditory image, but when the auditory centers are overcharged the visual images awaken directly an auditory image before the spoken words take place. Now this auditory image is so intense, on account of overcharge, that it becomes an auditory hallucination and the patient hears his own thoughts uttered aloud. This reflex action from one "ideational"

center into another occurs while the patient reads or writes, and that is why he has the experience, the hallucination that there is a voice often regarded as "inner" which repeats his own words and phrases.

Cases where the voice utters the words and phrases before they are written are explained on the hypothesis that the central discharge into the overwrought, auditory centers occurs before the words are written down or before the motor discharge takes place. When, however, the patient hears the voice repeat the phrases soon after he has utterd them, the phenomena are explained on the supposition that the centripetal currents from the speech centers into the auditory centers give rise to the voices, the patient hearing his own words shortly after he has uttered them; the efferent discharge from the graphic centers into the auditory centers will give rise to an auditory hallucination of hearing the words and phrases he has just written.

In the phenomena of "double hearing" the patient hears his own voice while talking or reading aloud, and then hears another voice due to the discharge from the speech centers to the overcharged auditory centers. Thus in some patients these hallucinations of hearing are brought about by the voluntary suppression of speech, the patient then hears a voice uttering his own thoughts. This is claimed as confirming central initiation—the currents from the word images in the speech centers not having a free outlet run into the overcharged "ideational auditory centers," and give rise to inner speech heard by the patient.

In opposition to this central theory of double thinking or of "inner speech" held in various forms by psychologists and psychopathologists, there are some

who maintain the view that these "double thoughts" hallucinations are not of central, but of peripheral origin, being due to hyperæsthesia of the centripetal paths. The apparatus employed in speech carries out not only the requisite delicate movements, but also forms the sensitive apparatus for information of the movements executed.

The sense of movement may be regarded as originating in the muscles, especially in the joints and articular surfaces. Sensory stimulations coming from these structures to their appropriate central systems give rise to kinæsthetic sensations and motor ideas. Now if the peripheral sensory tracts of the muscle sense or of kinæsthetic sensations become hyperæsthetic, kinæsthetic sensations and motor ideas are aroused automatically and may give rise to hallucinations of positions, movements and acts; movements which have not been performed are thus experienced.

If now the centripetal sensory tracts of the speech centers are hyperæsthetic, then kinæsthetic sensations and ideas arise which go to form the hallucinations known as "double thought." The patient experiences "inner" speech, a voice repeats after him his own thoughts, his own words and phrases.

When the speech centers are overcharged and give rise to automatic, centrifugal discharges, then the hyperæsthetic centripetal paths bring it back in the form of spoken words, and the patient experiences his own thoughts uttered by an inner voice which is foreign to him. In speaking the inner voice comes after the speech and reverberates like an echo, it persists as an "after image" of the spoken word or phrase. When the patient is engaged in writing, the voice usually precedes

the written phrase, because the spoken word image precedes the written word image, the inner voice thus anticipates the patient's writing by uttering his thoughts.

This theory seems further to be confirmed by cases in which such hallucinations take place. If one observes closely cases of "double thinking" or of "inner speech," he often finds "involuntary whispering" present—the patient whispers to himself. These whispers come back to him; on account of the hyperæsthesia of the peripheral paths, he hears it as speech of some inner voice.

A close examination of the two theories, of the central and of the peripheral, reveals their inadequacy. The central theory, as it is generally put forth and commonly accepted, may possibly be regarded as the more inadequate of the two. For the central theory rests on the psychological fallacy, so prevalent in psychopathology that it may be regarded as the psychopathologist's fallacy, namely, that an image may reach such a high pitch of intensity as to become sensory in nature and give rise to a percept. The percepts, formed by the visual perception of reading, awaken, according to this theory, also accompanying ideas of sound intimately related to and associated with visual word reading, and it is these ideas that reach such a high intensity as to give rise to hallucinations of hearing, the words are read aloud, as if by a strange voice.

This explanation, as we have already pointed out, is psychologically incorrect and rests on the fallacy that ideas or images have intensity, and that an intense idea becomes a sensation, or that a sensation is but an intense idea, and an idea is a weak, a faint sensation. To modify this view and assume that an

intense idea stimulates and gives rise to the formation of a percept is to assume a supposition not warranted by facts that an idea is equivalent to the action of external stimuli or objects with their requisite physical structures and processes. In either case, the central theory as it stands is not in accord with psychological and physiological data, and, as such, cannot possibly be accepted, at least in the shape as it is usually put forth.

Furthermore, there is an inherent difficulty in the central theory itself. For if it be correct, as the theory claims, that the visual image calls forth an intense auditory image amounting to a hallucination, the hallucinatory voice should precede and not follow the patient's reading. In order to explain the hallucinations of double thinking or of double hearing in the case when the voice follows the reading, it would have to be assumed first that the visual image of the written or printed word stimulates the speech centers, which, innervating the muscular apparatus of speech, give rise to reading, which in turn stimulates the peripheral auditory apparatus, awakening activity in the auditory centers, giving rise to the hearing of the read words, and that then only do the indirect stimulations of the visual image, coming from the visual centers, awaken once more the same central connections, thus bringing about a repetition of the self-same words heard.

We have to assume that the action of the visual centers in stimulating the motor speech centers with the resulting acoustic stimulations and functioning activity of the auditory centers are enacted before the direct central stimulations from visual center to auditory center take place; in other words we must *assume central retarda-*

tion. Now what does this central retardation mean ? It means that the phenomena of double thinking or of double hearing are brought about by some form of central inhibition, of central blocking of pathways as it is usually put: in other words, the requisite condition of double thinking is reduced to the psychopathological state of central dissociation.

The inadequate side of the central theory as it is commonly advanced lies in the supposition of referring auditory hallucinations in the phenomena of double thinking or hearing to the intensification of the auditory image or idea, but no straining of an auditory image can get a sound out of it.

Moreover, were the central theory correct it would really involve a double auditory hallucination, one preceding and the other succeeding the reading. For in the process of reading the visual image of the word awakens the auditory image along with its kinæsthetic image, stimulating the centrifugal motor apparatus and giving rise to the spoken word. Now this awakened auditory image preceding the spoken word, on account of the assumed irritability of the auditory centers and the consequent "intensification" of the stimulated auditory images, should necessarily give rise to a full-fledged hallucination. When the voice also follows the reading, a sudden dissociation of the visual from the auditory centers is assumed, a momentary dissociation that gives rise to a secondary succeeding hallucination of the words and phrases read and spoken.

The fact that the central theory requires the presence in all phenomena of double thinking, that when the voice follows the reading, another hallucinatory voice must have also preceded, and that there is

also a double stimulation from the visual into the auditory centers; that the hallucination first appears under conditions of association of visual and auditory centers, while the succeeding hallucination occurs immediately under the opposite conditions, namely dissociation,—all these assumptions make the central theory wholly unsatisfactory and unacceptable.

The peripheral theory of double thinking is on general grounds more acceptable as it falls in line with psychological and physiological principles and facts. Unfortunately the special facts which the theory is called for to explain do not exactly tally with it and may even be said to contradict the hypothesis. For if the hallucinations of double thought are due to hyperæsthesia of the centripetal sensory-motor tracts then reading aloud should intensify the hallucination, but the case is quite the reverse,—reading aloud makes the hallucinatory voice to disappear altogether.

On this theory again, the voice should follow and not precede the reading. We are thus confronted with the opposite difficulty met with in the central theory. On the central theory the hallucination should precede, while on the peripheral theory the hallucination should follow the reading. The central theory cannot account well for succeeding hallucinations, while the peripheral theory does not account well for preceding hallucinations.

On the central theory there should be double hallucinations in cases where the voice follows reading, while on the peripheral theory there should be double hallucinations, when the voice precedes the reading. Besides, "hyperæsthesia" should rob the perception of its hallucinatory character, the patient should be all the more conscious of his own utterance.

A closer examination of the peripheral theory discloses a fundamental fallacy which it primarily involves, a kind of *ignoratio elenchi.* The theory is probably correct in principle, but it misses the essential point of the whole problem; it may be an adequate explanation for motor, but not for auditory hallucinations. Hyperæsthesia of the central motor speech tracts would at most give rise to pure kinæsthetic hallucinations. The patient may have hallucinations of actions, tension, or of movements in his peripheral speech organs, but he will have no hallucinations of hearing.

To have an auditory hallucination, as to have an auditory perception in general, the auditory peripheral and central apparatus should be stimulated. No other organ but the acoustic apparatus can possibly supply sensations and percepts of an auditory quality, unless the hallucination be of a reflex, secondary character, but then it may be induced through any other peripheral source than that of kinæsthesis of the speech organs.

Although each theory taken by itself proves to be inadequate and leads to contradictions to facts, still the two may be regarded in a certain sense as supplementing each other. Now the central theory emphasizes the aspect of the central character of the phenomena, while the peripheral theory lays stress on centripetal factors.

Both theories can be brought in line with facts, if assuming centripetal factors of kinæsthesia and auditory hyperæthesia, we also refer to the central conditions of dissociation. *The patient in double thinking is subject to subconscious states, to states of dissociation.* This dissociation is of a central character and specially affects the visual and kinæsthetic systems. Impressions, on account of dissociation and peripheral

hyperæsthesia, are subconsciously received and subconsciously reacted upon. The visual impressions of the written and printed characters are subconsciously perceived and subconsciously uttered in a whisper and sometimes quite loud, as I had occasion to observe in my cases. This subconscious utterance, unperceived by the patient, comes back to him as a strange, external voice proclaiming the patient's thoughts or repeating his words and phrases.

The phenomenon of "double hearing" is due to subconscious whispering which comes back to the patient as an auditory hallucination. I had the occasion to verify this phenomenon of subconscious whispering in cases in which functional dissociation was quite marked, and in which auditory hallucinations and double thought were quite persistent.

In cases where the auditory hallucinations precede the reading or writing it is the subconscious whispering along with kinæsthetic and auditory hyperæsthesia that give rise to the phenomena of "double thought," or of "double hearing." The dissociation being in the kinaesthetic systems the patient does not experience consciously the peripheral incoming sensations due to his subconscious whispering.

More often the patient continues to whisper subconsciously what he has just read consciously. Such a habit is common with many people in the normal state and is due to the persistence of the peripheral sensory impression, to a kind of verbal after-image. The absence, however, in the normal condition of dissociative states prevents the formation of subconscious whispering with its consequent auditory hallucinations partly due to hyperæsthesia of the auditory tracts.

If cases of "double thinking" are closely examined, one finds in them the presence of subconscious states with their psychomotor reactions; the patient in walking on the street, for instance, may hear a voice telling him words and phrases that can be traced to signs and advertisements which he has read subconsciously, though he himself has not been aware of it. What happens in such cases is this, the patient whispers or even utters aloud the words he subconsciously sees on the signs.

It is this subconscious whispering that comes back to him as an auditory hallucination of a voice. In my cases in which the patients suffered from auditory hallucinations I found on close examination the phenomenon of unconscious or subconscious whispering, which became aggravated in proportion to the state of distraction in which the patient was, ranging from an almost inaudible whisper to a loud talk, the patient being entirely ignorant of it, so that he could not be made aware of it, even when his attention was called to his talking. One of my patients suffering from pronounced auditory hallucinations, but in whom the dissociation is not deep, aptly describes his experiences as "autovocalization."

Similar conditions can be induced in hypnosis, thus confirming our point of view by experiment on otherwise normal people. If a post-hypnotic suggestion of subconscious whispering is given, the subject experiences an hallucination analogous to that of "double thought," —the subject hears a voice telling him the words and phrases which he himself whispers, but of which he personally is entirely ignorant. The *peripheral* character of the "double thought" under condition of *central dissociation* may thus be regarded as an efficient

working theory in accord with facts.

From the whole course of our review of facts and theories it appears that we remain more closely in touch with facts, if we accept the view that hallucinations require states of dissociation as a central condition, and that they are primarily peripherally initiated, having secondary sensory elements as their main content; in other words, *hallucinations are dissociated secondary percepts.*

CHAPTER XXI

HALLUCINATIONS AND PSEUDO-HALLUCINATIONS

WE must emphasize the fact that persons who happen to have occasional hallucinations may not be subjects of secondary sensations. They may happen to have been under conditions which produced in them a sensory disaggregation and the formation of new and temporary sensory association, giving rise to hallucinations. But this condition of the nervous system vanishes with the disappearance of the conditions themselves. Such states are produced by toxic agents, such as haschish, opium, morphine, and other hypnotics. As soon as the operating causes are removed the nervous system returns to its previous condition.

In the case of sane individuals who happen to have illusions or hallucinations there are two criteria used for a verification of the correspondence of internal percepts formed in response to external objects. One is (*a*) sensory, and the other (*b*) social.

If a man perceives an object and wishes to satisfy himself that it is really there, he verifies it by means of other sense organs. Thus if one sees an apple or hears a sound and wishes to determine whether the object is really there, he goes to the object, examines it with his other senses. If he hears a bell or organ, he goes and verifies its presence by the sense of sight and touch.

This, however, is not the only criterion, for man in

psychopathic states or under the influence of certain toxic or autotoxic agents may have hallucinations of any or all of his sense organs. In fact, hallucinations of all the organs sometimes occur. Man, therefore, has often recourse to the other criterion, the social one. He seeks verification of the existence of an external object from his fellow beings. When one hears a voice or a sound, he turns to his companion to learn if he too heard it, and if others present do not confirm his perception of sound or sight, the sane man will consider it as an hallucination.

It is shown by statistics that at least one in ten normal individuals has had an hallucination once in his life. However, as in the case of illusions, hallucinations are much more often found in insanity when there is present a more permanent and more extensive disturbance of psycho-physiological processes. The hallucinations, therefore, are not only more frequent, but more persistent than in sane persons.

While sane persons have more often visual hallucinations, in the insane auditory hallucinations predominate. This does not mean that sane persons may not have auditory hallucinations, but the latter are not so persistent. In fact, I have good reasons for believing that many young children have auditory hallucinations and illusions.

It may be that those with auditory hallucinations more often form delusions than those having the visual, since speech is more impressive. Speech is the medium of social intercourse, which lies at the base of growth and intelligence in man, and hence the social criterion is an important factor in the formation, *by persistent suggestion,* of our belief in the exist-

ence of an external object. The patient therefore who persistently hears external voices lives in a social environment of his own that gives him the suggestion and assurance of the real existence of the hallucination, and thus a delusion is developed. In short, it is quite conceivable that one should form a delusion by experiencing persistent auditory hallucinations.

Even in normal persons hallucinations and illusions are not uncommon when sleep comes or goes. These are known as hypnagogic or hypnapagogic hallucinations. They always appear in the intermediary state between the waking and sleeping states. At this time also occur the "nightmares" which really consist of hypnagogic hallucinations and illusions.

Hallucinations may occur while the person is passing from the waking to the sleeping state or *vice versa*. Such hallucinations and illusions, hypnagogic and hypnapagogic, are due to the fact that when man wakens or goes to sleep any of the senses may be awakened, and these senses give rise to percepts or to secondary sensations with their accompanying percepts. Very vivid dreams are of the same nature.

Pseudo-hallucinations are forms of hallucinations in which the sensory element is not strong and the subject is not sure of its existence; he does not project it into the external world, and still in some vague manner he refers it to some agency in the external world. Those persons who hear internal voices have pseudo-hallucinations. This condition is probably the beginning of the more pronounced form of hallucination into which the pseudo-form may sooner or later develop. The manifestation of pseudo-hallucinations is the beginning of the process of disaggregation and of the

formation of new sensory associations.

Pseudo-hallucinations may be temporary, occurring only once, or they may become persistent. It must not however be understood that pseudo-hallucinations must necessarily precede fixed hallucinations. It depends simply upon the process of disaggregation and the formation of new sensory associations. The process may be a slow one, beginning with pseudo-hallucinations, or may be intense, having at once full fledged hallucinations. This in its turn is dependent on the intensity of the stimulus causing the condition, and on the predisposition of the patient to such a disaggregation and formation of new sensory associations.

CHAPTER XXII

HYPNOTIC HALLUCINATIONS

WHEN we first formed our acquaintance with hypnotic phenomena, we had many reports of the wonderful feats possible in the hypnotic state. Among the many marvels hypnotic and post-hypnotic hallucinations, induced by suggestion, occupied a prominent place. A good many of such hypnotic studies have been the result of amusement and at best of wonder. If it be true as Plato and Aristotle tell us that the origin of science is in wonder, all this is well and good as a beginning. When however we find that the beginning persists, when we find that the apparently precocious baby does not reach its adolescence and manhood, we begin to wonder what the trouble may possibly be, and whether it is not a case of mental defectiveness.

When we find that as the literature of the subject grows, the same state of blank wonder still persists; when we find that hallucinations induced by suggestion are described in all their minutiæ, without the least critical psychological analysis of the phenomena, it is time to ask whether the preliminary stage of hypnotic marvels and mysteries has not lasted too long. It is well to pause and ask the question: "Are there any hallucinations hypnotically suggested? Does the subject really experience the hallucinations?"

We rarely find in the whole literature of the subject that any of the writers should even as much

as refer to the question of the validity of hypnotic hallucinations. The hypnotic subject accepts the experimenter's suggestion and the experimenter takes the subject's honest word on faith. The trust is mutual. He, however, who has devoted time and reflection to the matter realizes that the introspective account of the hypnotic subject must be taken *cum grano salis.* First, because one rarely finds a subject who is able and trustworthy to give an introspective account; and second, one must always remember the training and extreme suggestibility of the subject, a suggestibility which makes the subject insist on what the experimenter suggests to him, no matter whether he really experiences it or not. This is the dangerous pitfall of hypnosis into which many an investigator in this field has fallen.

We cannot possibly base our scientific generalizations on the insight and "psychologizing" of one hypnotic case, nor can we accept universally the statements of the subject on the ground that the latter is of an exemplary conscientious character. One must be constantly on his guard, must have many cases, and keep on constantly sifting his material, and that with a good deal of skepticism. One must watch his subjects or patients closely, always have his suspicions, compare their statements with one another, and especially those of the same patient in various states.

In my experience of many years with hypnotic subjects, some of whom went into a deep somnambulistic state, a doubt gradually began to arise in my mind as to the validity of the hypnotic hallucination. When I came to devote my time to studies of cases afflicted with hallucinations, the doubt grew stronger and al-

most became a certainty. I could not help reaching the conclusion that *hallucinations hypnotically suggested are not genuine.* In other words, facts lead me to think that *there is no hypnotic hallucination* in the strict sense of that word.

Before we proceed with our discussion it may be well to review in brief our analysis of percept and hallucination, and then compare the latter with experiments of hypnotic and post-hypnotic hallucinations.

We may begin with the percept and its elements. In looking at the vase before me I see its beautiful tints, its rounded shape, its heavy pedestal with its rough curves, its solidity, weight, brittleness and other experiences which go to make up the perception of the vase. Now, the visual elements are given directly by the visual perceptive experience; but whence come the seemingly direct experiences of weight, heaviness, roughness, smoothness, and others of the like kind? They are evidently derived from other senses.

The whole perceptive experience is of a visual character. We take in the whole with our eye. In the organic structure of the percept then, besides the experiences directly given by the stimulated sense-organ, there are other experiences, sensory in character, indirectly given, and which come from other sense organs not directly stimulated.

The percept is a complicated dynamic product, and its elementary processes are never derived from one isolated domain of sensory experience. The activity of all the sensory domains coöperates in the total result of an apparently simple percept. Along with sensory processes directly stimulated, a mass of other sensory processes become organized and help to contribute

to the total result. The direct sensory elements are termed by me *primary sensory elements;* the indirectly given experiences are termed *secondary sensory elements.* The secondary sensory elements may be figuratively said to cluster round the primary sensory elements as their nucleus.

The whole perceptual experience is tinged by the character of the primary elements which constitute the guiding nucleus, so to say. Thus, where the primary sensory elements are visual, the whole mass, no matter from what domain the sensory experiences are derived, appears under the form of the visual sense, and the percept is a visual percept.

While the primary sensory elements form, so to say, the dynamic center of the total perceptual experience, the secondary sensory elements mainly constitute its content. Both primary and secondary elements are sensory and are induced peripherally; the primary directly, the secondary indirectly. The percept then is sensory, and is constituted by primary sensory elements, or primary sensations, and by secondary sensory elements, or secondary sensations.

The character of the secondary sensory elements stands out clear and independent in the phenomena of synæsthesia, or of secondary sensations. In synæsthesia we have a sensation of one sense organ followed, without an intermediary direct stimulation, by a sensation coming from another sense organ. Thus, when a sensation of light instead of giving rise to a subsequent idea gives rise to a sensation of sound, for instance, we have the phenomenon of secondary sensation. Here the secondary sensations stand out free and distinct, but they are really always present in our ordinary per-

ceptive experiences as bound-up secondary sensory elements, as secondary sensations grouped around primary sensations.

When the phenomena of synæsthesia were first brought to the notice of the scientific world, they were regarded as abnormal and exceptional, and only present in special pathological cases. Soon however their field became widened, and they were found not only in the insane and degenerate, but in many persons otherwise perfectly normal. We find now that we must further widen the field of secondary sensory elements and, instead of regarding them as a freak of nature existing under highly artificial conditions, we must put them at the very foundation of the process of perception.

Secondary sensations are at the basis of perception. We have become so accustomed to them that we simply disregard them. When, however, the conditions change, when the secondary sensations stand out by themselves, isolated from the primary, nuclear elements with which they are usually organically synthetized into a whole, into a percept, when they become dissociated, it is only then that we become conscious of them directly and declare them as abnormal.

Secondary sensations are always present in every act of perception; in fact, they form the main content of our perceptual activity, only we are not conscious of them and it requires a special analysis to reveal them. Secondary sensations *per se* are not something abnormal —just as hydrogen present in the water we drink or the oxygen present in the air we breathe are not newly created elements,—it only requires an analysis to discover them. If there be any abnormality about sec-

ondary sensations, it is not in the elements themselves, but rather in the fact of their dissociation from the primary nuclear elements.

Now when the secondary sensory elements come to the foreground and stand out clearly in consciousness, a full-fledged hallucination arises. In the phenomena of synæsthesia we have hallucinations in the simplest form, inasmuch as only isolated, secondary, sensory elements, dissociated from their active, primary, central elements stand out in the foreground of consciousness.

This very simplification, however, of hallucinations reveals their inner character. The most complex hallucinations are only compounds, so to say, of secondary sensory elements. Hallucinations are not mysterious, are not different from what we find in the normal ordinary processes of perception; they are of the same character and have the same elements in their constitution as processes of perception.

Both hallucinations and percepts have the same secondary as well as primary elements. The difference between hallucinations and percepts is only one of relationship, of rearrangement of elements, primary and secondary. When *secondary sensory elements become, under conditions of dissociation, dynamically active in the focus of consciousness, we have hallucinations.*

From this standpoint we can well understand why a hallucination, like a percept, has all the attributes of external reality. A hallucination is no more mysterious and wonderful than a percept. We do not recognize the humdrum percept, when it appears in the guise of a hallucination, and we regard it as some strange visitant, coming from a central world, from a supersensory universe. Hallucinations, like percepts,

are constituted of primary and especially of secondary sensory elements, and like percepts, hallucinations too are induced peripherally.

Now how is it with suggested or hypnotic hallucinations? Do we find in hypnotic or suggested hallucinations, as in the case of hallucinations in general, the requisite primary and secondary sensory elements directly and indirectly induced? Binet makes an attempt to establish a peripheral stimulus in the case of hypnotic hallucinations, claiming that there is a *point de repère,* a kind of a peg, on which the hypnotic hallucination is hung. This position is hardly tenable when confronted with facts.

Hypnotic hallucinations may develop without any peg and prop. Furthermore, granted even that now and then such a peg could be discovered, and that the alleged hypnotic hallucination develops more easily when such a peg is furnished, still the fact remains that even in such cases the peg is altogether insignificant, that it is altogether out of proportion and relation to the suggested hallucination; and that on the same peg all kinds of hallucinations can be hung; and that finally it can be fully dispensed with. All this would go to show that the peg, as such, is of no consequence, and is really more of the nature of an emphatic *suggestion* for the development of the alleged hypnotic or post-hypnotic hallucinations.

The arbitrariness of hypnotic hallucinations, showing that the whole thing is simply a matter of representation, or of what the patient happens to think at that particular moment, is well brought out in the following experiments:

Mr. F. is put into a hypnotic state, and a post-hyp-

notic suggestion is given to him that he shall see a watch. On awakening he claims he sees a watch. The eyeball is then displaced, the watch is also displaced; when the eyeball returns to its normal condition, we should expect that the hallucinatory watch would return to its former place; but no, the watch is not perceived in its previous place,—it appears in a displaced position. The hallucinatory watch could thus be displaced any distance from its original position. The patient evidently did not see anything, but simply supplied from his stock of knowledge as to how a seen watch would appear under such conditions, and he omitted to notice the fact that with the normal position of the eye the watch should once more return to its former position.

Such inconsistencies are often found in hypnosis. More intelligent and better informed patients would reason out the matter differently, and would give different results.

If the subject knows of contrast colors, and if a color is suggested to him, he will without fail see such contrast colors. If his eyes have been fixed on some hallucinatory color, such as red, for instance, he will even give you a detailed account of the green he sees, but if he does not know anything of the effects of contrast colors no amount of fixation on hallucinatory colors will bring out the least contrast effects. The reason is,—the patient does not know anything about it and cannot think of it.

I tried to mix by suggestion different hallucinatory colors, and as long as the subject knew nothing of the real results, his replies were uniformly wrong; no sooner did he find out what the right mixture *should* be than

he gave correct results. The hypnotic subject really does not perceive anything; he simply tells to the best of his abilites what he believes he ought to see under the given conditions.

It is extremely interesting to make one experiment which gives an insight into the alleged suggested hallucination, and shows its fictitious character. The experiment succeeds best when the subject is unprepared and is taken off his guard. I have tried it in various cases and have had uniform results. A suggestion is given to the subject to see a watch, say, on awakening. When he awakens, the watch of course is claimed to be seen in a kind of perfunctory manner.

If now another watch is put near the hallucinatory watch, the real watch is not taken notice of; it is absolutely ignored, as if it did not exist. If his attention is drawn to the real watch, the subject still continues to treat the real watch as unreal, and the suggested hallucinatory watch as the *only real one.* It is evident that in his honest zeal to carry out the suggestion he overdoes the matter, and thus clearly reveals the fictitious character of his alleged hallucination, which he, in fact, does not experience.

If now we give him the benefit of the doubt and tell the subject, when in the hypnotic condition, that when he wakes he will see *two* watches, thus calling his attention by suggestion equally to both watches, one as much as the other, on awakening he still ignores the real watch and his whole attention is occupied with the hallucinatory watch. The subject simply *overacts.* He is too anxious to carry out your suggestion and oblige you.

If we now try to test the matter by choice, and

ask him which of the two watches he prefers to have, he unhesitatingly points to the hallucinatory watch. When asked the reason, he replies almost anything that may at that moment occur to him; such, for instance, that the hallucinatory watch is newer or bigger, or any old thing he may happen to think of, no matter how absurd the reason is. In his eagerness to carry out the suggestion and to show the reality of the hallucinatory object, he chooses the hallucinatory in preference to the real watch.

The subject, in short, does everything in his power to convince us of the reality of his alleged hallucination, and in his eagerness he overdoes things, thus clearly revealing the fact that he really does not perceive the hallucinatory object. The so-called hypnotic or post-hypnotic hallucination is really not a hallucination and should not be taken as such. *The suggested hallucination is more of the character of a delusion.*

To take a couple more of my experiments with cases of hypnotic subjects: H. R. goes into a deep somnambulistic state. I carried out on H. R. a series of experiments in color hallucinations. The results were far from being uniform. To take an example: He was given a suggestion to see red; he saw it, of course. He was then told to look at it and tell me what he saw. At first he answered at random; he saw the chair, the table, the books, and so on. When he found out that color was wanted, he obliged me with that. All kinds of contrast colors, white, blue, yellow, orange and brown were given. No sooner did he find out the approved color than he saw it and stuck to it afterwards.

I had similar results in the case of mixture of hal-

lucinatory colors. Red and green, for instance, gave all kinds of results but the right one. No sooner was the right color hit and the subject felt that the experimenter approved of the guess, than he kept on "seeing" it without any further modification.

All through these experiments a good deal of fishing was done by the subject, and *this fishing was probably the most instructive part of the experiment.* On the whole, I must say that the statements of the hypnotic subject should be treated with extreme circumspection. *I often wondered which of the two is the greater dupe, the subject or the hypnotizer.*

On one occasion I suggested to H. R. to see a hallucinatory pencil; he saw it, of course. He was given the suggestion to insert the pencil in water; he did so. "What happened to the pencil?" I asked. "It turned red," he replied. When, however, he found out that the experimenter had in mind the refraction of the pencil, then his pencil behaved accordingly. The subject, especially the good one, the one who is capable of good training, is eagerly on the lookout for the slightest wish and caprice of his manager, and is always fishing for the best way of doing it, of carrying out those wishes to the delight of the hypnotizer.

In cases of primary dementia or dementia præcox and katatonia under my observation and experimentation, I found hallucinatory states strikingly like those of hypnosis. Thus in one of my cases of katatonia, Q. M., the patient could readily be made to see all kinds of hallucinations, no matter how incongruent. The patient could see a "four-horned chicken with toes on its tail;" "a cat with two legs and wings;" "a tree with feet, eyes, and wings," and other visions of like kind.

To demonstrate their reality the patient actually drew these visions. Similar experiments were carried out by me on hypnotic subjects. The patient could be made to see lions, wolves, elephants and tigers, and was no more afraid of them than the hypnotic subjects are in similar conditions. *The fact is that neither the demented nor the hypnotic subjects actually experience the suggested hallucinations.*

Experiments, therefore, point to the fact that suggested hallucinations, hypnotic and post-hypnotic, are purely ideational and closely conform to the course of associative, ideational, or representative activity. In other words, the subject does not really perceive the suggested hallucinatory object. He simply thinks of it.

The subject to whom I gave the suggestion of seeing the watch no more saw the hallucinatory watch than I saw it. He *thought* of the watch, and he *claimed* he saw it and acted as if he did see it. Furthermore, he was anxious to carry out fully my suggestion to the best of his abilites, and persuade me that he really did see an actual watch, *more real than a real* watch. The alleged hypnotic or post-hypnotic hallucination is not at all of the nature of a hallucination, it is a *delusion.*

All we do by such a suggestion is to act on the subject's belief. The subject believes that he perceives, and he, in his turn, as one under a delusion, tries to convince us of the reality of his belief; and I must say that he is quite successful in imparting this delusional belief to the experimenter himself, thus unconsciously, but ironically none the less, repaying his deluder in the same coin.

One of the special characteristics of hallucinations, as of percepts in general, is that of *reality* or of *ex-*

ternality. The hallucination, like the percept, during the time it is experienced, is clothed in the full garb of external reality. The hallucination is regarded by the percipient as an external object of perception. Hence he who suffers from hallucinations experiences them as he does any normal sensory percept, and, unless he learns in other ways the hallucinatory character of his perception, he reacts to it as he would to any of his normal percepts of external reality.

Now if we closely watch the subject possessed by the alleged hypnotic or post-hypnotic hallucination, we find that the inmost character of externality is sadly lacking. The sensori-motor reaction is by no means the one produced by the corresponding sensory percept.

After all, *the best criterion of an experienced percept,* especially if it be that of another organic living being, *is the total motor reaction.* The proof of the pudding is in the eating. The subject does not react to the "suggested" pudding as if it were worth the eating. The reaction is by no means the one called out by the perception of an external object, regarded for the time being by the percipient as actually present, no matter whether that presence be right or wrong, whether it be hallucinatory or not.

The suggested hallucination calls forth a reaction, if there is any at all, of a very weak character totally disproportionate to the supposed stimulating presence of the hallucinatory object. The motor reaction is such a one as is called out by a representation, by a thought of the object, but not by an actual perceptive experience of an external object, as it is in the case of an actual hallucination.

In hallucinations of ghosts or of tigers, for in-

stance, the patient actually perceives, sees the ghosts, the tigers, the serpents; but in suggested hallucinations the subject sees the suggested objects no more than we do when we talk about ghosts, tigers and serpents, or when we suggest them to the subject. The subject thinks of the suggested hallucinations and acts as if he perceived them. In fact, the most we can do is to create in him a belief in the supposed presence of the suggested hallucinatory object. *The subject is not in the psychic condition characteristic of hallucination, but he is in the mental state characteristic of delusion.*

The most we can say of hypnotic, post-hypnotic, or suggested hallucinations is that they are saturated, so to say, with the belief in the supposed presence or existence of the object suggested, somewhat in the same way as the child believes in Santa Claus, or as the school boy believes in Washington, or as we believe in the existence of Julius Cæsar. The belief, however, is not of the vital over-bubbling, stimulating effect given by a direct perception of an external object, true or hallucinatory, but is one essentially representative in character. And that is all that we can claim for the potency of the hypnotic state and efficacy of suggestion.

Hypnosis with its allied states can modify, undermine, create belief, and important modifications can be induced in the total mass of representative life activity. Associations and dissociations can be brought about in the dynamic processes of representations or ideas, but we cannot create objective sensory miracles. If faith and ideas move the world, as they most certainly do, we have in our hands a powerful instrument, which, if intelligently used, may prove of the greatest benefit

to civilization and humanity.

We should not, however, delude ourselves and ascribe to hypnosis mysterious magic virtues. *The hypnotic state with its abnormally increased suggestibility can give rise to belief, to new associations and dissociations of ideas, but by no legerdemain can it produce, without the intermediacy of peripheral physiological processes, the faintest sensory element.* Faith may move mountains, but it cannot create the minutest particle of dust, nor can suggestion create the most insignificant sensation.

We should not delude ourselves as to the power of suggestion, even if it be in the hypnotic state. A suggestion even in a hypnotic state, however deep, can do no more than a very vivid persistent idea can do in the waking state. An ideational process can give rise to motor and possibly to some glandular changes, but no mental magic will ever make of it an external stimulus capable of giving rise to peripheral physiological processes resulting in a sensation with the cumulative effects ending in perception.

Suggestion cannot cause an amputated leg to grow, nor is suggestion a reliable antitoxin in infectious diseases, nor is it regarded as an efficacious antiseptic; it can hardly be credited with the power of destruction of the minutest bacterium, nor is suggestion regarded as possessing the medicinal virtues of regenerating a single destroyed neuron. Why then should we be so credulous as to endow suggestion with the wonderful and mysterious qualities of producing sensations and percepts without their adequate, complex, peripheral, physiological processes?

As far as our present knowledge of facts goes we

are not only justified in saying that the efficacy of the hypnotic state with its greatly increased suggestibility is limited entirely to ideational processes, to their integration and disintegration, and that it can do no more than can be effected by a very vivid idea under the most favorable conditions. But are we justified in claiming that ideas however vivid can become sensations and perceptions? No more than our ideas of vapor can become the power of steam.

We may as well claim that our idea, say of red, provided it is "strong" enough, may give rise not only to the peripheral, physiological, sensory processes, but also to the requisite physical processes, to ether vibrations of color red, and thus to influence by a backward "reverse current," so to say, the sense organs and minds of other persons.

We may arrive at that "scientific" speculation about telepathic power possessed by our minds of impressing the "Universal Ether," and of imprinting on it our thoughts, wishes, and sensations, so that it simply remains for other men or "sensitive mediums" to breathe in or take in the impressions that flood the ethereal universe.

There is not a particle of evidence that ideas, however vivid, may become "centrally" transformed into sensations. The idea of musk does not smell; the idea of white does not shine, and the idea of sound does not ring. The suggested hypnotic and post-hypnotic hallucinations, along with the alleged central hallucinations and other notions of like kind belong to the general category of psychological and psychopathological fallacies.

It savors somewhat of the mediæval alchemists' belief that gold could be refined out of any old

rubbish. Suggestion reminds one of the magic powers of the philosopher's stone,—its touch can convert the base metal of fictitious ideas into the pure gold of sensory experience. The wonder is that the world is not one large asylum for ideas to play gambols in, raise havoc with all our sensory experience, and make us suffer from all kinds and forms of hallucinations, inasmuch as a high-pitched ideational activity would give rise to the same sensory elements and consequent perceptions as do peripheral stimuli and physiological processes. Our ideas would be regarded as realities and our great expectations as actualities.

It is agreed on all hands that no sensation can be transformed into another even if they both belong to the same domain—the sensation of yellow cannot become orange much less that of sound, for instance, because they are qualitatively different. How then can we maintain the untenable position that ideas, no matter how intense and vivid, can ever become sensations or percepts, can ever form sensory, perceptive experiences, even if they be hallucinatory in character?

The validity of hypnotic hallucinations has passed unchallenged, because of the dubious assumption of the central origin of hallucinations, an assumption still current among psychologists and especially among psychiatrists who still pin their faith to "images and idols" and accept uncritically the introspective lucubrations of insane and dements. Although the introspective account of the hypnotic subject is far more trustworthy and valid than that of the insane and dements, it should nevertheless be taken with the utmost caution and should not be too credulously accepted on its face value.

If we eliminate then the psychopathological fallacy of central transformation of ideas into sensations and percepts, we clearly realize the flimsiness, the spurious character of suggested, hypnotic hallucinations. *We have first of all to prove that the subject actually experiences the suggested hallucinations.*

We should not be blinded by a too devout worship of "central images," but should pay more attention to facts, to the actual mental condition of the hypnotic subject. The fact that the introspective account given by the subject confirms most emphatically the presence of an actual hallucination does not count in this case. The introspective account is just the one that is the *least reliable* in such cases, because of the untrustworthy, suggestible nature of the whole state, and as such should if possible be avoided, especially in cases of long standing in which suggestibility has been trained to its utmost.

We must always keep in mind the highly suggestible character of the hypnotic subject, and that from the very nature of his state of suggestibility, he sticks to the apparently objective description of a purely ideational experience. We must remember that the suggested hallucination is given in terms of objective perceptual experience, and that the more effective the suggestion is, the more suggestible the patient is, the more will he insist in his introspective account on objective description of his experience, given to him in the suggestion by the experimenter. The so-called *hypnotic hallucination is an artifact elaborated by both parties in the experiment,*—it is a kind of an unconscious collusion, formed between the experimenter and the subject.

In order to find out the delusional nature of the suggested hallucination, it is well to begin with an intelligent, trustworthy subject who has no knowledge of the marvels and mysteries of the hypnotic state, and no training has yet been permitted to effect by means of the cumulative effect of suggestion the highly artificial results which destroy the value of many a valuable case.

Now if we take a fresh case with no mystical humbug about it, we meet with results far different from those which are usually described and reported. Of the various cases under my observation and experimentation I may take the case of one patient who went into a deep hypnotic state. To quote from my notes:

"Mr. N. goes into a deep trance. While Mr. N. is in the hypnotic trance I suggest to him that as soon as he wakes he shall go to a jar full of water and look into it and see a series of scenes from his former life. On awakening and hearing the signal he goes to the jar, looks into it, and begins to recite the scenes or the events of his former life. I suddenly stopped him and asked him: Do you see all that in the jar? No, he replied, I see it in my mind; I have it all in my mind." The subject did not really see it; he simply thought of it.

The subject is hypnotized again; the suggestion of hallucination is enforced. On being awakened, when the signal is given he goes to the jar, looks into it, and begins once more to recite his supposed visions. "Do you see them in the jar?" I ask again. "I do not know," he answers, "whether I see them in the jar or in my mind; it is hard to tell." Evidently my succeeding suggestion has brought about some hesitation in his belief

or attitude as to the pure ideational character of his supposed visions. He would not have hesitated in his statement as to the whereabouts of the alleged hallucinatory objects had he perceived the actual, external objects as is the case in actual hallucinations.

The hesitation is also instructive from another standpoint, namely, the training which the subject gets by the form and insistence of the suggestions given to him. The patient was just on the point of giving way to the suggestion of objectivity of pure ideational experiences; a few more experiments and suggestions and he would have given a full description of a suggested hallucination in its full perceptual objective glory, so delightful to the heart of most experimenters.

The simple truth of the whole matter was that the patient had not the least perceptual experience of the objects suggested by the alleged hallucination; he did not see anything, he did not see the scenes anywhere, he only thought of them, he simply remembered them, possibly very vividly, but still they were only thoughts, memories, and not perceptions, not actual visions.

I could similarly bring from records a number of other cases under my observation, cases in which the suggested hallucinations were at first regarded as unsuccessful, and only after some repetition did the hallucinations apparently become fully developed. Thus in some of the cases put into hypnosis for the first time the subjects declared on awakening that they did not see anything, but that the thought of the suggested object came to their minds.

What really happened was that the subjects not as yet trained by a whole course of "suggestive treatment" gave me at first a real account of what was actually tak-

ing place in their minds. Such results are usually regarded as unsuccessful suggestions. As a matter of fact, it is such failures that are really successful and that give the actual state of mind, while the *successful, suggested hallucinations are artifacts.*

Dr. I. C., on whom I have carried out a series of experiments, goes into a deep somnambulistic state. He is an excellent visualizer and takes readily visual hallucinations. Being a physician and psychiatrist the subject's account is all the more valuable. Dr. I. C. describes his hallucinations as "mental pictures," as "auditory memories," which "lack exteriority, are not located in space." He aptly characterizes his hallucinations visual, auditory, and others, as *"fixed ideas."*

Mr. M. goes into deep hypnosis. When in one of the deep trance-states a suggestion is given to him that on awakening he shall see a watch. When awake he claimed he saw a watch. He was asked: "Do you really see it?" He replied "Yes." The interesting point here was the fact that the subject did not even look in the direction where the suggested hallucinatory watch was supposed to be placed, and where he himself claimed that the watch was located. When tested by automatic writing the hand wrote: "Yes, I see the watch." The subconscious then was also under the influence of the suggested hallucination. This point is well to bear in mind.

Rehypnotized, and suggested that on awakening he would see *two* watches. One was a real silver watch and the other was hallucinatory. The subject claimed he saw both, but he handled the hallucinatory one, and when asked which of the two he would prefer, he pointed to the hallucinatory watch. When asked why, he

replied that the suggested watch was bigger. He was really indifferent to the chosen watch and paid no further attention to it, as if it did not exist for him.

He was again put into the hypnotic state and was suggested to see a flower. On awakening he claimed he saw a flower and smelled it in an indifferent, perfunctory fashion. The subconscious was then tested by automatic writing and the writing was to the effect that he saw it: "I see a flower." The subconscious then had also the same hallucination. A series of similar experiments was carried out with the same results. *The subconscious claimed in automatic writing that the suggested hallucination was real.*

The subject was again put into hypnosis and was given the suggestion that he would see a watch on awakening, but here I made some modification. "When you wake up you will be sure to see a watch," I said emphatically. "Look here; I want you to write what you really see and not what you do not see." When awake he saw a watch, but he immediately wrote: "I do not see anything." *Here the subconscious disclaimed the suggested hallucinations which it had claimed and insisted on before.*

Rehypnotized, he was given the suggestion that on awakening he would see three watches. He was awakened and a real silver watch was put before him; the other two were hallucinatory. He claimed he saw all three. Meanwhile, in automatic writing he wrote: "One silver watch, real, the others golden, not real; nothing there." A series of similar experiments was made and with the same results. *The automatic writing disclaimed the hallucinations, although before, under the same conditions, it most emphatically insisted*

on their reality.

The subject was put into hypnosis and a post-hypnotic suggestion was given to him that he would see his wife and child. When awake he began to smile, and when asked why he smiled he said: "I see my wife and child;" but he wrote: "I see nobody." When put again in hypnosis he still continued to smile and said: "I see my wife and child;" but he wrote (in hypnotic state): "I do not see them really; I see nothing; I see my child, but I really see nothing." "What do you mean," I asked, "by 'I see my child, but I really see nothing?'" To which he replied: "I mean that I see my child in my mind only, but *'honest'* I don't see anything."

I then gave him a post-hypnotic suggestion to see a snake. He claimed on awaking that he saw a snake. He manifested no fear. He certainly did not behave as if he really saw a snake, and wrote "I see a snake. I see it in my mind." A great number of similar experiments were carried out by me varying the suggestions, and all with the same results. I shall not burden the reader with a detailed account as they all gave identical results.

At first the automatic writing claimed emphatically the presence of the hallucinatory object, but when the truth of the automatic writing was insisted on, the writing disclaimed fully the perception of the hallucinatory object. Finally we came on the real character of the suggested hallucination; "I see my child but *honestly,* I do not see anything; I see my child in my mind only; I don't see anything." In other words, if we take the facts plainly and do not play hide and seek with the subconscious, we come to the conclusion that

in suggested hallucinations the subject does not perceive anything as is the case in an actual hallucination, but that he simply represents, vividly perhaps, what is suggested to him; in short he does not perceive, but he simply *thinks* of the suggested hallucinatory object.

Another interesting point may be brought out here. The automatic writing, as is usually the case, is not taken cognizance of by the patient, and, although this same writing at first claimed the actuality and genuineness of the suggested hallucinations, it gave in the second series of experiments the real insight into the whole matter: "I see the child; I see nothing; I see it in my mind."

When the subject was made conscious of his automatic writing, and became fully aware that he was being entrapped, he once more began to claim in automatic writing the actuality of the suggested hallucination. As long then as the automatic writing was regarded by the subject as independent of him, for which he was not responsible, and as long as the suggestion of the hallucination was not taken as directly addressed to it, the subject himself frankly acknowledged the fact that he did not see anything.

No sooner, however, was this truth of the automatic writing brought home to the subject so that he should be confronted with it directly and squarely, than he was bound by the fact of the given suggestion to claim that he actually saw the suggested hallucinatory object, although he really did not see anything at all. This is most instructive. For it shows clearly that the hypnotic consciousness, from the very nature of its heightened suggestibility, clings most anxiously to the given suggestion and insists on the reality of its fulfillment.

We must, therefore, be on our guard and not trust the subject's introspective account, unless it is corroborated by good circumstantial evidence. It is because such precautions have not been taken in the close interrogation of the subject's actual state of mind, and because of the deep-rooted psychological fallacy as to the relation of ideational and perceptual activities that the prevalent belief in the validity of suggested hallucinations has passed unchallenged. If not for those fallacies, it seems to me, it would have been quite evident that *hypnotic and post-hypnotic suggested hallucinations are not genuine, but are essentially spurious; that hypnotic hallucinations, unlike actual hallucinations, are not really experienced; that hypnotically suggested hallucinations are only forms of delusions.*

CHAPTER XXIII

THE APHASIAS

THE aphasias are on the border of the domain of psychopathic states and a knowledge of them is instructive to the student of psychopathology. To comprehend the aphasias we must again make a brief review of the process of perception. In perceiving an object, in having impressions come from a particular object, these impressions give rise to sensations, and the sensations bring into operation subconscious processes, the results of associative, synthetic activity of other sense organs. These enter once more into association and give rise again to the synthesis of a percept.

In the formation of a percept subconscious associative groups and systems are awakened by the impression produced by the stimuli of the particular object. The impressions or their accompanying psychic elements, the sensations, form the cue and also the centre of the awakened, subconscious groups.

The sensations produced by the object form the living elements of the percept. To give an example: In seeing an orange, the orange impresses the eye, peripheral physiological processes are induced in the optic nerve; these processes go to the centre, the occipital lobes, where sensation of sight is awakened. At the same time, movements are induced in the eye. The eye explores, so to say, the outside of the orange; some sensations of form may be excited, the orange may

appear somewhat round. These sensations form the cue to the percept.

Really what is directly experienced is only a group of sensations of light and form. But this does not yet constitute the percept of orange. As soon as such particular sensations of form and light are experienced the entire percept of orange emerges, that is, previously experienced states of consciousness emerge, become associated with the given sensation, and the percept orange arises. In other words, as soon as we see the orange and experience the particular sensations of its color and form, we see that it is an orange; that it is juicy, has a certain taste and weight, is globular in form, that if touched it will give a certain sensation of hardness or resistance, or when taken in the mouth it will give a certain taste sensation; all that is directly seen by the eye as soon as the peripheral stimulus is given by the external object, the orange.

We say we see the orange. The eye, however, cannot feel taste, cannot feel pressure, cannot feel coolness; what the eye can specifically see is only color and perhaps some form due to kinæsthetic sensations, arising from movements of the muscles of the eye ball. We are not conscious of all this mechanism. As soon as we get the visual sensation from the orange, at once all other states are brought into synthesis in consciousness.

To show that such is really the case, let us see what happens, if an artificial orange is substituted. We take it for the real orange, we try to smell it, we try to feel it, and then we find out that it is not the real object, and we then often say we are surprised to have been deceived.

The fact is in seeing an object we never directly ex-

perience all the other sensations which arise from the particular object and which go to constitute the particular percept. In other words, in perception, far more is indirectly than directly experienced. The sensations directly experienced form the nucleus of the percept. In the particular example given, the orange as seen, the nucleus, is the sensations of light and form. The other elements come indirectly, they are reproductions of previously experienced subconscious processes.

What do we mean by subconscious processes previously experienced? How do they happen to come to us? The orange has been experienced many times, we have handled the orange, we have smelled it, pressed it, tasted it. The external object, the orange, acted on our tactual organs, giving rise to sensations of touch; it acted on our muscles and gave rise to kinaesthetic sensations; it acted on the olfactory organ, giving rise to sensations of smell; it acted on our gustatory organs and awakened sensations of taste. These sensations have been repeatedly associated in our lives; we cannot possibly eat the orange without handling, seeing, and tasting it. Now when mental or sensory states become associated, the excitement of one of them awakens all the others, and all the states emerge in the same synthesis as before, in the percept. That is why when we see an artificial orange or when we see another fruit which looks like an orange or would give rise to altogether different sets of sensations and other experiences than the orange, we still in seeing it, perceive the orange.

It is possible so to arrange light and shade as to give the eye sensations similar to the ones that come from the real object, the orange. The sensations being similar,

the percept emerges to the surface and once more we see an orange. Every one is familiar with this effect in art, in pictures. In experiencing a certain sensation, we also have the immediate knowledge of the object that gives rise to the sensation, in other words, simultaneously with the sensation, many other experiences emerge which have been associated with this particular sensation and which correspond to the sensations that this particular object may excite, if it were applied to other sense-organs.

It is usually said that the other sensations are *revived memory-images.* Thus in hearing a ring and having immediately the presentation of a bell, we say that the bell has in the course of our life given rise to many different sensations, and that each sensation was preserved in memory, it has, so to say, left a memory image in the particular area that regulates this particular sense. The areas have become associated, on account of the associated stimuli of the particular object, the bell, and now when one sensation arises, such for instance, as the auditory sensation, the rest of the sensations are also revived in memory.

This account is not exactly true; we must remember that a revived sensation is a sensation itself, but the memory image is certainly not a sensation. In hearing a sound and thinking of a bell we do not actually have the sensation of *seeing* the bell, but we only represent to ourselves the bell. *A memory image is not a revived sensation.* Had the sensation of sight been actually revived we would have had a perceptual experience, perhaps a secondary sensation, but not a representation. Memory-images are not of the nature of revived sensations, they are peculiar ideational processes, different in

nature from sensations. Physiological processes of representation differ fundamentally from sensory processes.

It is wrong to assert, as some are apt to do, that sensations leave a kind of after-sensation, a memory image, which can at any time be revived. The most we can say is, that the physiological process that goes on within the respective sensory centers gives rise to other physiological processes within some other neighboring centers, processes different in character, but analogous as to content. Thus, for instance, the vibration of the air acting on the drum of the ear induces a peripheral physiological process within the auditory nerve. This physiological process reaches the sensory area, a physiological process takes place then which gives rise to particular sound sensations. At the same time the sound is here directly *presented* in consciousness.

We may now close our ears, we no longer hear the sound. The sensation is no longer present in consciousness, but we can represent to ourselves the same sound; the sound is now *represented* in consciousness. The representation of the sound is not the same as the sensation of sound, nor is it another sensation of sound; in fact it is not a sensation at all; it is rather an idea or image that corresponds to that sensation.

We cannot say that the representation of the sound is the same as the sensation of sound but less in degree. For if that were so, we should experience not the same sensation as the original one, but rather a sound of less intensity, and hence really a different sound. In short, we must conclude that every presentation has its corresponding representation which is different in its psychic nature from the original sensation.

A representation or image therefore is not a revived

sensation, it is a psychic process *sui generis*. What we can say is that every sensation gives rise to a psychic process which we call "a memory-image" or representation, and which has the same *functional* relation to sensation as the sensation to the external stimulus.

Every percept consists of a synthesis of a central presentation in one sensory area associated with sensory elements coming from other sensory areas. Thus let *O* be an object in the external world; let *a, b, c, d,* be the respective sensations which this object gives, if applied to different sense organs. Let *a', b', c', d',* be the respective reproduced sensory elements which may be termed secondary sensory elements of the sensations given to the object *O, a'* corresponding to *a, b'* to *b, c'* to *c* and *d'* to *d*. Now *a, b, c, d,* will become associated, in the course of the individual's life, with their respective secondary sensory elements and corresponding representations, so that when *a* occurs, the secondary sensory elements and corresponding representations of the others that were not directly excited in this particular experience also recur so that *a* brings up *a' b' c' d'; b* brings up *a' b' c' d'* and so on. The percept recurs each time as one of the constituent sensations is excited.

Physiologically regarded, a percept, therefore, consists of many processes taking place in various sensory and associative areas. On seeing an orange, there is a sensory process going on in the visual areas supposed to be in the occipital lobe, in the areas that subserve gustatory sensations supposed to be located in the lower part of the fourth temporal convolution, and those of touch and muscular sense in the post parietal precuneus and gyrus fornicatus convolutions,

associated with these there may be also sensations of sound going in the auditory area, the first and second temporal convolutions. Along with the perception there are also present motor adjustments due to physiological processes in the motor areas grouped about the Rolandic fissure. Moreover, the percept is localized in space and time and is associated with respective representations, and with the consciousness of personality. *We may, therefore, say that such a simple function as perception involves the activity of the whole cortex.*

As soon as the object, orange, produces the impression and gives rise to a physiological process in the sensory area of the occipital lobes, all the other cortical areas associated with it, become sub-excited, systems of neurons in the different areas begin to function, and give rise to the psychic concomitant, the percept, orange. These different associated areas and the physiological processes of systems of neurons, corresponding to the representations, each one near its sensory area, form all kinds of combinations, adjusted to external objects, responsive to particular stimuli, and go to constitute what we term the associative areas.

What happens if dissociation or a lesion occurs between the sensory area of the occipital lobe, thus cutting off the occipital area from the other centres? The patient experiences the particular sensation awakened in the occipital lobe. He will see the shades and colors of an object, for example, the orange, and if the muscular sensations of the eyes are still associated with the occipital lobe, the person may even see the form, and may even be able to represent to himself the particular sensations experienced, but no percept

will come to consciousness, the sensation will have for him no *meaning,* that is, there are no associative, sensory and ideational interrelations with other cortical and subcortical systems with their consequent motor adjustments and glandular reactions. The patient suffers from what is termed *visual apraxia.*

The same may happen for example with gustatory sensations. You may ask a man to close his eyes and you place a bit of orange in his mouth; he may immediately recognize the taste as belonging to the particular fruit. Should there be, however, a lesion in the temporo-sphenoidal lobe, affecting the gustatory area, so as to separate it from the other areas of sensation, the patient will experience the sensation of taste, possibly, also that of pressure, if this area is not dissociated by the lesion; he will be able to represent the sensation afterward, i. e. he will have a memory of the sensation, but he will not know the character of the object, he will not know it is an orange, for instance. This may be called *gustatory apraxia.*

In hearing a bell, the image of the particular object rises to our consciousness with all its accompanying associated secondary sensory elements and corresponding representations. Should, however, a lesion occur in the third temporo-sphenoidal convolution, thus shutting off the auditory area from the rest of the areas, the other areas will not be stimulated, the secondary sensory elements and corresponding representations will be absent and the patient will not know the character of the object, the bell. As soon as the sound ceases the subject will be able to represent again to himself the sound, but he cannot form an idea as to the character of the original object, no image of

bell arising in his consciousness. This may be characterized as *auditory apraxia.*

Systems of tactual presentations may similarly become disaggregated. External stimulations may give rise to sensory processes, but no representations are awakened; the memories relating to this particular class of sensations are gone, and no appreciation of tactual stimulations is aroused. The patient does not know of the stimulations, he is not directly conscious of them, since the stimuli fall below the threshold of representative consciousness, although they may be subconsciously present to simpler moments of lower types.

If the clustering memory representations of the other senses become disaggregated from the psychic elements of the tactual sense, then the functioning of those elements does not give rise to the associative activity of unlike representations entering into synthesis with tactual elements to form particular systems of moments. The patient on being stimulated through tactual sense realizes and knows the nature of the stimulus, he feels and knows the touch, the pain, the pressure, the prick, the burn, but no particular object or system of objects is called up in his mind.

In the individuals in which the visual sense is present and forms the focus of most of the lower presentation moments the sensory elements of the tactual sense rarely, if ever, become the integrating nuclei of moments-consciousness. Their combination with other unlike elements is rather of the nature of representative association, than that of integrating synthesis. If I happen to touch an object in the dark, the visual representation of the object, or rather the associated mem-

ories with visual representations as nuclei arise in my mind, the elements of the tactual sense are felt in a synthesis with the revived associates.

This, of course, varies with individuals of different types, such as the auditory, the motile, and others. In the motile type the tactual sensory elements are no doubt of far more integrating value than is that of the visual type. Still it remains true that in man the visual sense predominates and forms the nuclear elements of psychic synthesis. This is especially seen in perceptual activity where synthesis is at its height.

In the blind, tactual as well as kinaesthetic and auditory psychic elements are of importance in the life of the individual as they form the nuclei of moment-consciousness. A disaggregation of these nuclei gives rise to forms of amnesia of much interest. It goes without saying that a disaggregation of the tactual memories affects the blind far more profoundly than a similar disaggregation in normal individuals.

The patient may become quite helpless, especially is this the case, if the loss involves representations of tactual and pressure sensations, coming from the more deeply situated tissues, such as the muscles, joints, and tendons, thus also involving kinaesthetic representations. If the process of disaggregation affects the interrelation between the tactual, sensory presentations and representations, the result will be that the patient on touching one object, say a bell, or a liquid, as water, will be unable to know the object, but he will immediately know it when sensory stimulations will awaken presentations in other senses.

This will become still more evident in the educated blind. The blind who have learned to read by

passing their fingers over raised symbols, have acquired a special system of representations corresponding in complexity to our visual system of representations in reading written and printed characters. Should this system become disaggregated, the patient loses his knowledge of reading with his hands, although he may be able to write, that is, to make the raised signs of objects, qualities, actions, and relations. This will correspond to alexia, only in this case it is not visual, but *tactual alexia.* The patient is able to write, but he cannot read his own writing.

If the auditory representations are disaggregated, the patient will not be able to understand spoken words, will be unable to write to dictation, but he will be able to speak spontaneously, write, and read, although he will be unable to understand his own reading. In this respect there is no difference in the psychomotor manifestations or symptoms from what is ordinarily observed in similar cases of otherwise normal individuals.

In the same way apraxias of other sensations may occur. There may be apraxia of two or more sensations. In fact any combination may occur. It is clear that in visual apraxia, for example, although the patient in looking, say at the orange, will be unable to tell the character of the object, he will, however, be enabled to tell its nature, if the object is acting upon some other sense organ, not dissociated from the system of sense areas. Thus he will be able by smell or taste or even by touch to know that it is an orange, although he will be unable to perceive it in visual terms. He will be much as the blind man who has never seen an orange, and hence has his representations in terms of other

senses, yet appreciates the character and use of the orange.

The percept formed will lack the representation of the particular dissociated sense area. For instance in case of gustatory apraxia the patient in seeing the orange will have the representation of every sensation of the orange except as to its taste. Or in auditory apraxia the patient in seeing a bell will lack the representation of sound.

If now there is a lesion of such extent as to prevent the associative activity of all the special sense areas, we have a condition termed mental blindness or *total apraxia.* The patient will be unable to know the character of objects no matter which sense is impressed. The sensations are correctly perceived, and each may even be represented in consciousness, but their representative association in synthesis will be absent.

Man's mental life, however, is not so simple as we have described it. Man is a social being. Living in a social environment he communicates his experiences to his fellow beings. This communication is expressed either by gesture, such for instance, as we find among deaf mutes and among different Indian tribes, or what is more common, by sound or by different combinations of sound. Sound being more variable than are gestures, it is better adapted to express the variety of experiences.

In the synthesis of the percept, therefore, there must be associated also sound representations and kinaesthetic memories of production of sounds. These sounds, their representations and the kinaesthetic memories of their productions, do not directly come from the object itself, they are symbolical, call-

ing up the synthesis of the percept, or the percept calls up its particular symbol. To give an example: On seeing the orange not only all the constituent representations of the percept orange arise in consciousness, but also the sounds that constitute the symbol of the orange, or its name, likewise arise, and not only the name of the object, but also the kinaesthetic representations of the name.

On seeing the object the name occurs to us, and *vice versa* on hearing or pronouncing the name of the object its representation appears in consciousness; the percept itself, the characteristic of which is that in normal life it must have as a center a particular sensation awakened by peripheral stimuli only, is not present. The percept gives rise to representation of the word or name, and the hearing of the name or word gives rise to the representation of the percept.

In other words, on perceiving the object the name occurs to us, and *vice versa* on hearing or pronouncing the name the representation of the taste of the orange or of the sound of the bell calls up the rest of the associated representations of the object. The same is true in more complex mental life, the representation of a word will call out other associated representations, that is, the meaning of the word or the representation of the object of which that word is a symbol.

Should however the auditory area, or those systems of neurons the function of which are concomitant with the sensations and representations of words, become affected, be dissociated, the hearing of the word or of the name no longer calls up its associated representations of which it is a symbol. The patient hears a word, can represent the sounds to himself, can repeat

it, if the motor area of speech is not dissociated, but he no longer knows the meaning of the words he hears. This condition is called *sensory aphasia.*

Should, however, the kinaesthetic sensations, or the motor area of speech alone be affected, hearing of the word will call out its associated representations of which it is a symbol, but not the kinaesthetic representations. The patient, on hearing the word, will know its meaning, but will be unable to pronounce it. This condition is termed *motor aphasia.*

In reviewing the disturbances of speech we have endeavored to simplify matters. The mental mechanism we are now examining is rather of a more complex nature. Not only has man in his social life, in his intercommunication with his fellow beings, developed sound symbols, expressed in speech, but in the course of social development there was also worked out a whole system of signs symbolizing the auditory symbols. *The word* is represented by a *written sign.* A child learns first to speak, to call different objects by their names which are symbols of objects, and afterwards, as he grows up, he learns to write, that is, to express these *sound symbols by visual symbols.*

The association of mental states, called up by an object, becomes still more complicated. In the first place a sensation produced by an object acting on the sense organs calls up conscious and subconscious representative states corresponding to this object and synthetized in the percept; then the representations of the name with the kinaesthetic representation of its production are awakened, and besides there may also be awakened visual representations of the sound representations and also kinaesthetic sensations by which these visual rep-

resentations are manifested, that is, expressed in motor terms. In the second place, one may see these visual signs of auditory symbols, and all the complexities of representations, corresponding to the name and to the object will be awakened.

To illustrate our point, on seeing a man the visual sensation will give rise to a complexity of presentations and representations synthetized in the percept, 'man.' Furthermore, the name 'man' may come into consciousness, and this may give rise to the kinæsthetic representations manifesting themselves in the sound 'man.' This will further give rise to the visual symbolization of the auditory symbols, and if the kinaesthetic sensations are also awakened, we may write the word 'man.'

We started here directly from the object. The process may, however, be started in the reverse order, instead of going from the percept to the symbol, we may go from the symbol to the percept. We open a book and see there certain signs *m a n*. These visual sensations awaken their corresponding visual representations of memories, associated with their related auditory and kinaesthetic representations which may be manifested in the word 'man,' and along with it all the synthetized representations, corresponding to the percept, are awakened, and we know that the word means 'man,' a certain object. This is especially clear in observing children learning to read and write and in the study of foreign languages. On seeing the word *homo* the first attempt is to pronounce it, then to associate it with some system of representations.

What will happen if in the occipital lobe the systems of neurons whose functional activity is conco-

mitant with the psychic processes of visual representations of auditory symbols, i. e. reading or writing, is dissociated or destroyed? The patient will be unable to read. There will be a condition known as *alexia.* The patient will be able to see the letters, may even be able to imitate, to reproduce them but will not know their meaning.

Similarly in the case of writing, if the systems of neurons, the functions of which consist in the represensations of the kinaesthetic sensations of writing, be destroyed or dissociated, the patient will be able to see the word, to read it, will know its meaning, but will be unable to write it. This will constitute the state of *agraphia.*

There may be a complicated pathological process where the lesion occurs in the conducting fibers between the visual sensory word system of neurons and that of their associated representations. The result will be that the patient, on seeing written or printed letters or words, will be unable to read them. He will be, however, able to write, although he will be unable to read his own writing. The only way for him to grasp written symbols is by kinaesthetic sensations. He may pass his hand over the printed or written letters and may thus be able to know their meaning. Of course, this will require some education. This will constitute one of the forms of *visual aphasia.* If all the representations are gone then the patient will be unable by any means to grasp the meaning of the word or letters. The former may be termed *relative visual aphasia,* the latter *absolute visual aphasia.*

The same thing may happen in the case of writing. If the area of the graphic, sensory, neuron systems

is injured or the fibres going to their associative representations are interrupted by a lesion, the patient will still be able to write correctly, but upon closing his eyes or attempting to write with his eyes closed, he will be unable to know whether he has written correctly or not. That is, the kinaesthetic sensations being absent or dissociated, the patient will not know what his hand has written. He will however be able to know what he has written by looking at the words. This may be termed *relative agraphia.*

Should, however, the kinaesthetic representations of writing also be injured he will be unable to write at all. This may be termed *absolute agraphia.* In the same way there may be *absolute and relative apraxia.*

We can realize now that there may be various forms of aphasia and apraxia, according to the number and function of the systems of neurons involved. Thus systems in the sensory area may become affected, or systems in the association areas may become dissociated, or different combinations of systems in the sensory and association areas may become involved.

In addition to these forms there may also be different forms of apraxia and aphasia due to lesions or pathological processes within the conducting fibers, either from the sense organ to the sensory area or in the fibres between the sensory area and association areas, or in the conducting fibers within the association areas. That is, the lesion may be subcortical, or cortical, when within the body cells themselves, and transcortical when within the fibers in the associative areas. These will give rise to various forms of aphasia. We may therefore classify the aphasias and apraxias physiologically, according to the location of

the lesion as subcortical aphasia and apraxia, cortical aphasia and apraxia, and transcortical aphasia and apraxia.

There are some special forms of aphasia and apraxia that are of interest. Amusia is a name applied to a condition in which the patient, a musician, is unable to understand muisc when he hears it; or it may be of the visual form in which case he will be unable to read notes; or of the motor form, when the patient cannot sing or play; or it may be of the graphic form when the patient formerly familiar with musical composition lost the skill of writing notes.

As a rule amusia is associated with some other form of aphasia or apraxia. Frequently we find that aphasic patients more or less retain their musical knowledge, since music, the language of emotions, is more organized, more primitive than speech and writing.

Amimias are forms in which the patient has lost the power of expressing himself in gestures commonly used in life. Amimias may be either of the motor or sensory type. Expression by gestures is simple, acquired early in life and is associated with the emotions. Gestures are more stably organized than the rest of mental life and are therefore the last to succumb to pathological processes.

The process of disintegration in different systems of neurons may be of various degrees and intensities thus distorting the process of association. This may give rise to occasional wrong associations. Thus we may have *paraphasia,* if for instance, the patient inserts a wrong syllable in a word or a wrong word in a phrase, etc.; or in reading the patient may read incorrectly; or in seeing an object he may occasionally regard it as

another object. For example, he may use a knife as a spoon, or try to cut with a fork. These various forms of *paralexia, parpraxia,* etc., may in their turn be cortical, subcortical, and transcortical.

The forms of reviewed aphasias may be of an organic nature, or of a functional psychopathic character which may closely simulate organic conditions.

CHAPTER XXIV

DELUSIONS

DELUSIONS do not belong to the domain of functional psychology, but deserve our consideration, because they fall on the borderland of psychopathic states. A delusion is conceptual in its nature. One may have an illusion or hallucination and still be perfectly sane. He may attempt to verify it by one of the two or both criteria and, finding it false, refuse to give assent to its external reality or objectification. It is only when one gives assent to his illusion or hallucination, that is, when he believes that it really exists externally, it is only then that it becomes a delusion. To give an example,—There may be paraesthesia in one's hand. The member may feel like putty or glass. This in itself may be considered an illusion. The patient attempts to verify it with his other senses, tries to show it to other people, his physician for instance, and failing to confirm it, then simply regards the feeling as subjective. But if the patient, in spite of all verification with negative results, and social objections and assurances and arguments by his fellow-men, should give assent or still confirm the objectification of his illusion or hallucination, then it would constitute a delusion characteristic of insanity.

To give another example, if a man has an hallucination or illusion that he has seen something like a mermaid, it is a delusion when he gives his assent to it and affirms that it really exists. In short, the man who has

an illusion or hallucination is correct subjectively. He is only wrong when he objectifies it, and then it becomes a delusion. The patient may have the hallucination of hearing a voice; it becomes a delusion, if he objectifies the voice and thinks some one is addressing him.

Delusion can be defined only in social terms. Man is essentially social in nature and living in a certain social environment, he may maintain certain ideas and do certain things, which under other social conditions would be considered as non-adaptations. Thus for instance, a man performing an Australian dance in a public thoroughfare of some civilized city would be promptly examined as to his mental state, while an Australian savage performing the same feat in his own country would not be regarded as abnormal, because the actions are adapted to his social environment.

The same holds true with regard to ideas and beliefs. A delusion, therefore, may be defined as a false belief which may lead to actions, out of accord with the social environment. This, however, does not entirely constitute the insane delusion. Another factor of the insane delusion is the impossibility of changing or correcting the erroneous beliefs, even though the lack of adaptation is pointed out and made perfectly obvious. An insane delusion, therefore, may be defined as a persistent, incorrigible, unsocial, erroneous belief.

Although an assent given to an hallucination or illusion constitutes a delusion, not all delusions are necessarily accompanied by illusions or hallucinations. All of the perceptions may be quite correct and the patient may still have a false belief in his formation of judgment about the perceptions. Thus for example, a man may in reality hear whispering or conversation, but the

interpretation of the whispering and talking may be incorrect, that is he may believe that all of them relate to himself, such as conspiracies to injure him, in spite of the general assurance and evidence by his friends that nothing of the sort exists. Here then the sensory criterion cannot be used since the man is quite correct in his impressions. It is only when the social criterion is applied that he is found to be insane.

The general definition of delusion, therefore, may be expressed as a persistent, incorrigible, individualized, false belief, either in regard to self or environment, or their interrelation. An insane delusion differs from the sane delusion which may be maintained by the members of a whole society. Thus, for instance, in the middle ages, people who became ill, explained their illness as the result of witchery, were perfectly normal persons, because this was the general belief, although false, of the age. But if to-day a civilized man should make any such claim and persist in his belief, he would be suffering from an insane delusion. Since delusions are false beliefs in regard to adjustments of external to internal relations, they may be classified, with Mercier, as due to:

1. Delusion in regard to change in environment.
2. Delusion in regard to change of self.
3. Delusion in regard to change of adjustment of self to environment.

Delusion in regard to environment may be of illusory or hallucinatory character, or incorrect belief as to the external environment. For example, a man may regard a clock in his room as an animal and constantly treat it as such. Or he may have an hallucination of angels or devils and then believe that

he is having conversations with them.

The incorrect interpretation of the external environment is illustrated by those who have the delusion that they are in some strange country surrounded by a foreign people and will make attempts to speak the foreign language.

Delusion in regard to change of self may be either partial when for example, the patient believes a part of his body is made of some material, such as wood or glass, or it may be complete, when, for instance, the patient believes that the entire body is changed.

Delusion in regard to change of adjustment of self to environment is well illustrated in delusions of grandeur, persecution, megalomania, or micromania, etc. In delusions of grandeur the subject considers himself better or richer than he is, or may think himself some great personage, the Saviour, or God Almighty, etc.

Delusions may again be divided into (1) svstematized; and (2) unsystematized.

1. A systematized delusion is an organized system of mental states of which an erroneous belief or delusion forms the center. The patient brings the different impressions coming from the external world in logical relation to some one erroneous belief that has complete possession of him. The belief seems to form a mental eddy in which all external impressions are caught; the whole mental life of the patient becomes crystallized about this false idea. He may, for instance, consider himself a messiah; he will behave in accordance with this belief, live up to it, dress accordingly, and no matter what he sees or hears he will in some way relate it to his messianic mission.

2. An unsystematized delusion is one in which a false

belief is entertained, but there are at the same time maintained other beliefs and other impressions, which are in direct opposition to the delusion. The patient makes no attempt to bring his various sensations and perceptions in accord with his delusion. Such delusions we find for example in dementia paralytica, dementia praecox, and other cognate conditions. The patient, for instance, may consider himself a thousand miles in height. It may be pointed out to him that his neighbor is only six feet tall. He will agree that his neighbor is tall and that he himself is shorter. But when at once asked how tall he is, he will again reply that he is a thousand miles high. In short, he fails to harmonize the rest of his perceptions and ideas with his delusion.

CHAPTER XXV

AMNESIA, ABOULIA, AND APROSEXIA

A MENTAL state that refers to an event which has taken place in the past, or at a certain date within the same personal experience is regarded as *memory*. Memory requires the *retention* or *conservation* of the past experience, *reproduction* as an idea or mental image, *localization in time,* and the *reference to* the same experiencing personality, or *self*. As James tersely puts it: "A general feeling of the past direction in the time, then, a particular date conceived as lying along that direction, and defined by its name or phenomenal contents, an event imagined as located therein, and owned as part of my experience,—such are the elements of every act of memory."

Memory depends on what Professor James terms "setting" that is the concomitant date, self present, warmth and intimacy, and so on. It is this setting which makes us conscious of the past as past. According to James "The only hypothesis to which the facts of inward experience give countenance is *that the brain tracts excited by the event proper, and those excited by its recall, are in part different from each other*. If we could revive the past event without any associates, we should exclude the possibility of memory, and simply dream that we were undergoing the experiences as if for the first time." In other words, we would have what I describe as a hypnoidic state.

Forgetfulness in itself should not be regarded as an abnormal phenomenon as some are apt to think and even develop a fanciful psychopathology of every day life which claims that forgetfulness depends on some hidden wish and desire, as if forgetfulness is a voluntary affair or something that depends on wishes and desires of the subconscious, getting rid and suppressing or forgetting the disagreeable. Nothing can be further from the truth. They who claim it show not only lack of psychological insight into human nature, but in order to retain the Procrustean bed of their fanciful speculation, they cripple and ignore the facts of ordinary life.

Nothing so much impresses itself on the mind and is remembered so lastingly as some extremely painful experience. *The very attempt at trying to forget a painful experience stamps it all the more strongly on the mind. We remember best what we eagerly wish to suppress and forget.* The human race, and in fact all animal life, would have long ago disappeared from the face of the earth, if painful experience tended to be forgotten.

We may also add that experiments performed on the oblivescence of the painful tend to prove that it is the painful that remains for a long time specially vivid in consciousness.

The characteristic of consciousness is purposive selection for the need of the present moment of consciousness. What is not requisite for the present moment has to be forgotten in order that mental activity should be carried on at all. "If we remembered every thing" says James, "we should on most occasions be as ill off as if we remembered nothing. It

would take as long for us to recall a space of time as it took the original time to elapse, and we should never get ahead with our thinking. All recollected times undergo, accordingly, what M. Ribot calls foreshortening; and this foreshortening is due to the omission of an enormous number of facts which filled them."

Ribot insists on the fact that "one condition of remembering is that we should forget. Without totally forgetting a prodigious number of states of consciousness, and momentarily forgetting a large number, we could not remember at all. Oblivion, except in certain cases, is thus no malady of memory, but a condition of its health and its life." *Remembering is a continuous forgetting.*

The greater the number of associations, or the more numerous the experiences of the settings, associated with the event, the easier it is to remember, especially so if the event and its setting have been gone over repeatedly in recollection.

The principle of substitution is of importance in the phenomenon of forgetfulness. The possibility of substitution of other ideas or words serving the same purpose makes it harder to remember. Hence in proportion as the possibility of such substitution becomes more increased, forgetfulness increases.

"One of the most striking symptoms of failing memory," says Wundt "in both normal and pathological cases, is the weakening of verbal memory. There is a lack of ability to remember, first proper names, then names of concrete objects in the ordinary environment, still later abstract words, and finally particles that are entirely abstract in character. The suc-

cession corresponds exactly to the possibility of substituting in consciousness for single classes of words other ideas that are regularly connected with them through complication. This possibility is obviously greater for proper names, and least for abstract particles which can be retained only through their verbal signs."

Kussmaul puts the matter in a still clearer light: "The more concrete a conception is, the sooner is it forgotten. This is because our ideas of persons and things are less strongly bound up with their names than with such abstractions as their business, their circumstances, their qualities. We easily can imagine persons and things without their names, the sensorial image of them being more important than that other symbollic image, their name. Abstract conceptions, on the other hand, are only acquired by means of the words which alone serve to cover stability, and still more adverbs, prepositions, and conjunctions are more intimately connected with our thinking than are substantives."

We may add that the factor of repetition must also be taken into consideration, inasmuch as proper names are not so often repeated in experience as verbs, adjectives, and pronouns.

Forgetfulness in short is not as some superficial writers explain a matter of wish and will, whether conscious or subconscious, it is a highly complex phenomenon depending on a number of physiological and psychological factors.

The same holds true in the case of amnesia. A subconscious state with a vague or weak attention as in dreams or narcosis, or a change from one state

of consciousness into another, as from somnambulism into the waking state is sufficient to give rise to amnesia.

Of course, there is no need to point out the well known fact that the time element has a strong influence in the weakening of retention, reproduction and recognition of our past experiences. Ebbinghaus and afterwards Wolfe discovered by a long series of experiments the following law: "The quotients of retention and forgetfulness (of the time saved for memorization and the time requisite for relearning) are inversely proportional to the logarithms of the times passed since the first learning."

We have pointed out that while sensory elements have intensity, representative elements possess vividness. Representative elements representing as they do presentative or sensory elements may refer with various degrees of vividness to the same sensory experience. Thus we may have different vivid representations in regard to the same event which we have lived through some time before. Such vividness may pass through all degrees, from the highest to the lowest and finally reach the barely representable, almost bordering on the threshold of vividness.

Sensory intensity and representative vividness are closely interrelated. Intense sensory processes usually go with vivid representations. There are however conditions when the two do not go together. A sensory process, however strong, instead of giving rise to an intense representation, may awaken a representation of low or of marginal vividness. In many subconscious states intense sensory experience may give rise to representative processes of such low marginal vividness that the latter fall below margin or the threshold of

consciousness or awareness, and are not perceived by the person. The experiences cannot be reproduced, cannot be recognized, and hence are not remembered. The experiences become dissociated. We may therefore say that where vividness is very low there we have dissociation. In other words, as we have pointed out before *dissociation and vividness are in inverse ratio to each other.* The lower the vividness the greater the amount of dissociation.

The same holds true in the case of amnesia, the lower the vividness of the mental states the greater and deeper the amnesia. In dream states as well as in other states in which the vividness of the representative elements is low and vague there is a corresponding degree of amnesia. The amnesia is all the greater and deeper where not only the representative elements are devoid of vividness, but where the sensory elements of the experience are lacking in intensity. Many psychopathic states, hypnosis and somnambulism, pre-epileptic and post-epileptic states as well as states of narcosis, and many dream states answer such conditions. *Amnesia may be regarded as a function of representative vividness and sensory intensity.*

Amnesia may be considered as anaesthesia of memory. The underlying pathological process of amnesia is a functional disaggregation of neuron systems in the cortical association areas. Instead of having relation to sensations, the anaesthesia is related to recollection of events, percepts, and concepts, or to their reproduction and recognition.

Memory, as we have pointed out, requires retention, reproduction, recognition, and localization in the person's time; that is, an experience must be retained, must

be capable of being reproduced or recalled, and when reproduced the experience has to be recognized as having taken place within the past personal life. In many cases the experience is retained, but can only be reproduced and recognized in subconscious states.

Regarded from this standpoint the pathological process of memory disaggregation may give rise to the following forms of amnesia:

I Amnesia of reproduction.

II Amnesia of recognition.

III Amnesia of the waking state, or complete amnesia.

IV Amnesia of retention, or absolute amnesia.

By amnesia of reproduction is understood that type of amnesia in which the reproduction of the experience is lost. Of course, it is clear that when reproduction is lost the recognition is also gone, for it is impossible to recognize the memories which are not reproduced. Still the fact that reproduction is lost does not mean that the element of recognition is completely gone. For while the patient is unable to reproduce the experience, he can recognize it fully and even localize it correctly in time, when the experience is presented to him in connection with some sensory impressions. We find such cases in the aphasias, the patient cannot write spontaneously, he cannot reproduce the letters, but he can read them when he sees them.

By amnesia of recognition is understood that form of loss of memory in which the recognition alone is gone. For memory requires retention, reproduction, and recognition. An experience must not only be reproduced, but must also be recognized as belonging to one's own past.

The patient is able to reproduce the old content of memory, the event, percept, or concepts and their combination, but he is unable to recognize them as belonging to his past. They simply come into his mind, but seem to him strange and unfamiliar. These forgotten memories usually can be brought out by distracting the patient's attention, or by placing him in a state of mental rest and comparative inactivity, or they may appear in the form of hypnoidic states. In many subconscious states, such as the hypnoid, hypnoidic and hypnoidal states, in the different forms of double and multiple personality experiences are reproduced, but they are not recognized.

In the psychopathic forms of amnesia of a motor character in which large zones of memories are engulfed into the subconscious we sometimes find that memories are gone, memories which can neither be recognized nor reproduced, still we are not justified in thinking that the memories are completely lost. For we can find them present on tapping the patient's subconsciousness. In deep and extensive forms of amnesia the patient can neither recognize nor reproduce what has been forgotten. The process of disaggregation of conscious and subconscious is complete.

The content of memory may be reproduced, but cannot be recognized as such. Memories can be easily reproduced, but they cannot be recognized as belonging to the moment's past experiences. This form of amnesia is characterized as amnesia of recognition, since one of the elements of memory, namely, that of recognition is wanting. There is a whole class of amnesias in which the patient is able to tell events from his former life, but he is unable to recognize them as

belonging to his own past.

The hypnoidal states have just this characteristic that when they first come to the surface, the memory content brought up is regarded by the patient as new experience, and only later on, with the synthesis of the hypnoidal states into the functioning moment, can recognition possibly become effected. Thus in the M. and F. cases the lost memories reproduced in hypnoidal states were not immediately recognized, they were taken as chance ideas, or mere fancies, and only some time later were they acknowledged and owned by the patient. Similarly in W. and other cases of like character the lost memories welling up from the subconscious in the form of spontaneous hypnoidal states often lack the element of recognition, and acquire it with the process of effected synthesis which, however, is not always forthcoming, as it depends on the depth or extent of disaggregation.

We must emphasize the fact which has been but too often overlooked, namely, the fundamental difference between reproductive amnesia and that of the purely recognitive character. In reproductive amnesia the very contents of memory are lost, whether the loss be functional or organic, whether relative and temporal or absolute; in recognitive amnesia or amnesia of recognition, the content of memory, on examination, can be shown to be present and reproduced, but it is not recognized as belonging to one's past life.

Amnesia of recognition is no doubt due to a narrowing down of associative connections brought about by the process of functional dissociation, affecting the particular content. For recognition, as we have shown is a function of associative systems, recognition becoming

more localized in time and more specific in proportion to the number of associative interconnections.

Recognitive amnesia depends on a limited field of associative activity, or rather to say on a great extent of dissociation, while reproductive amnesia, or amnesia of reproduction is the outcome of *complete functional dissociation*. In both cases the psychic content is *retained*, only in one case it is reproduced, but not recognized, in the other it is neither recognized nor reproduced.

In the phenomena of bimorphosis and polymorphosis of personality, whether coexistent or successive, the same important distinction between amnesia of recognition and amnesia of reproduction should be maintained. This distinction gives us a wider, deeper and clearer view of the phenomena and their interrelation.

In amnesia of the waking state or in complete amnesia the process of disaggregation has proceeded far deeper than in that of the previous forms. The moment has not only lost the power of recognition, but also that of reproduction. Hypnoidal states can sometimes be induced, but with extreme difficulty. When the lost content is indirectly presented to the patient by outsiders, such as his family, he cannot believe that he has lived through it, he cannot identify his past experience.

Similarly when the lost content wells up directly into consciousness through hypnoidal states occurring spontaneously, or induced experimentally, or coming in an indirect mode by way of dreams, the patient is still unable to recognize it as his own past. In this form of amnesia one has to look for hypnoidic states which occur during sleep in which the lost content is reproduced and recognized by the outlived and now fully resurrected moment.

Cases of complete amnesia are found in normal, healthy life, in abnormal mental states, in nervous diseases, in sanity and insanity. In the normal state we find it in relation to dream life. A third of our life we pass in sleep, a large part of which is filled with dreams, often exciting, but frequently leaving no trace behind. On awakening we can by no effort of will retrace the forgotten dream experience. It is apparently gone and lost forever, so it seems, but this is not so. Inhibit the principal synthetic moment of self-consciousness, descend to the lower subconscious regions of moments-consciousness, and there we may find the dreams. The dream becomes dissociated from the principal functioning constellations, the synthesis of which is the given waking personality.

In the abnormal states of alcoholic intoxication, for instance, we find that experiences of one state, especially that of the state of intoxication, are frequently not known to the sober state; the memories may recur with the return of the toxic conditions. In psychopathic sleeping states due to ill nutrition, or worry, or overwork and overexertion, or to all of them combined, we find that experiences lived through and acted out are immediately forgotten on awakening. We meet with cases of amnesia in many forms of psychopathic and neuropathic waking states.

In complete amnesia the system that has withdrawn is perfectly sound, only it possesses groups of a less complex nature, and the former connections can be again reinstated under favorable circumstances. Should, however, the hurtful stimulus be of such a nature as to destroy a whole system, then the amnesia effected is absolute. The connections can not any more be rein-

stated, because the system itself is destroyed.

The process of disaggregation setting in under the action of strong and hurtful stimuli is not something new and different in kind from the usual; it is a continuation of the process of association and dissociation normally going on in the higher constellations of mental systems. The one process gradually passes into the other with the increase of the intensity or duration of the hurtful stimulus.

In *amnesia of retention or absolute amnesia* the process of disaggregation has gone still farther and has brought about distintegration within the content itself. Recognition and reproduction are impossible, from the very nature of this type of amnesia, since the very content is affected. Hypnoidal and hypnoidic states cannot possibly be induced, because the disaggregated moment-consciousness has lost through degeneration all its psychic content. In the different forms of brain lesions, involving loss of cellular nerve tissue of the higher spheres, we meet with this form of amnesia, such, for instance, as the different forms of organic aphasias, or apraxias.

The results of the one continuous process of disaggregation through absolute amnesia differ fundamentally from reproductive, recognitive, and complete amnesia. In the former, in absolute amnesia, the disaggregated states are irretrievably lost; in the latter, forms of amnesia the seemingly lost memories are really present within the patient's mind in a subconscious condition. They can become manifest and finally even become synthetized within the functioning moment-consciousness.

Psychopathic amnesia differs radically from that of

organic nature. In the latter the affected content is irretrievably lost, in the former the seemingly lost memories are really present in a subconscious form, and can be brought out in hypnotic, hypnoidic, and hypnoidial states by proper psychopathological methods.

Regarded clinically from the standpoint of lost content, amnesia may be divided into the following types:

I General.
II Special.
III Localized.
IV Systematized.
V Sensory:
  a. local,
  b. total,
VI Motor:
  a. local,
  b. total,
VII Periodic.
VIII Alternating.
IX Progressive.

In general amnesia the whole content of the patient's memory is lost. In such cases the amnesia is so profound as to make of the patient almost an infant. The patient does not know how to eat, to talk, to walk, nor does he know anything of space or time. In short, he must learn everything over again. In such cases the retentiveness of memory in general for acquiring new things may be quite acute or even better than in the preamnesic state. Such a state is shown in the classic case of the Rev. J. C. Hanna. The general amnesia in this case is one of recognition, the reproduction occurring in hypnoidic states; the element of recognition, however, is absent.

In general amnesia memory is affected as a whole. No definite systems of the functioning moment become submerged and subconscious, but the functioning moment as a whole with all its acquisitions and riches sinks into the subconscious depths from which it cannot emerge, unless put under special conditions. The manifested psychic activity is at its *minimum.* The functioning moment-consciousness being submerged, there is apparently no manifested mental activity and a deep coma seems to be present.

External and internal stimuli finally awaken some new moment which begins to function with a *minimum* of content characteristic of early infancy. The amnesia is so profound that the patient becomes very much infant-like. The patient does not know anything about space and time, does not know how to eat, how to walk, how to dress, how to talk. Everything must be learned over again. It is true that the patient in such cases shows great, even extraordinary proficiency, learning things in a very short time, but he must learn every thing all over again. The general retentiveness of memory is often extremely good, even better than in the normal state. The Hanna case described in *"Multiple Personality,"* may serve as a good illustration. In general amnesia hypnoidal states are not infrequent, and one has to be on the lookout for them. Hypnoidic states may occur.

The lost content may be of a special character, the amnesia referring to the special senses, such as sound or light. The memory associated with visual stimuli for instance, may become affected and the patient may lose all ability to interpret visual impressions and sensations coming from external stimuli. The pa-

tient on seeing objects may be able to appreciate the different stimulations and impressions, and can even describe them, but he cannot know the object, or the particular visual stimuli which call forth visual impressions. The complex memory that is normally awakened by the visual impression is absent, the patient does not know the meaning of the impression, in other words, he does not know the object.

In this respect the patient may be regarded as blind; only it is not a sensory blindness, as the senses may, in fact, be in excellent condition, it is associated memory representations by which the sensation is perceptually interpreted as being this or that particular object that is wanting. It is not the sense that is deficient, but it is the mind that is blind. This is sometimes called mental blindness, more correctly visual apraxia, since it is only the memories awakened at visual sensory cues, it is only these memories that are really affected.

More frequently the amnesia is even more special, referring to a highly specialized content; the memories relating, for instance, to the interpretation of visual signs or symbols, such as written words may become affected. The patient is unable to read or even know his letters, although he may be able to trace them with his finger and even reproduce their shape and outlines from memory. In such highly specialized cases of amnesia it is not the visual memory which is deficient, but rather the systems of auditory representations.

We must guard against the confusion between visual memory proper and that "visual memory" which has little or nothing to do with visualization. The visual memory may be well preserved, be even in excellent state and still the patient may be to-

tally unable to read, may suffer from alexia. Thus in the case of C. an extremely interesting case of aphasia this state was present.

The patient could trace with her finger letters, numerals, both printed and written, could represent them in her mind with her eyes closed, but still could not read them. In other words, the patient *forgot* their names, that is the auditory representations and the modes of their *auditory* combinations. Visual memory then was present, but the auditory memory representations associated with and awakened by visual presentations was absent.

There are, however, cases where the pure visual memory is lost, when the patient is unable to represent to himself visually, he does not know, he forgets how things look as soon as they are removed from his direct visual presentation.

The amnesia again may be in relation to sound, tactual, kinaesthetic, and other stimuli. The specific impressions do not awaken the associated memories synthetized within the moment and giving rise to the perception of external objects. Once more we have to point out the fact that one must guard against the confusion of amnesia of the particular special sense representations and amnesia of associated representations coming from other senses. The two amnesias are different as to their nature of content, in the one case it is representations of the same sense that are lost, in the other case it is representations of other senses that are affected. This distinction is not only of psychological value, but also of clinical importance.

When memories having auditory sensations as their nucleus are affected, the patient can hear words

and voices, he reacts to external sound stimulations, has auditory sense impressions and sensations, but he does not understand them, he cannot interpret them, he has *forgotten* their *meaning* as relating to other systems of memory-representations. The special auditory presensations, excited by special sound stimuli, do not awaken their associated representations, synthetized within the same system of moments.

At the same time when the patient is examined as to his auditory memory proper it may be found that he can imitate sounds, words, phrases, repeat them sometime after they are pronounced before him, only he does not realize their *meaning,* just as we can learn to imitate and repeat words and phrases of a foreign tongue, the meaning of which is entirely unknown to us. This shows that auditory memory proper, or memory of auditory "images," as some neurologists would say, is actually present.

If the auditory memory is also affected, then the patient is unable even to imitate sounds, words and phrases, still less is he able to repeat them some time after he has heard them, since he has no auditory representations. Should, however, the auditory memory alone be lost, then the patient loses all auditory representations and, of course, all power of verbal conceptions. The patient may be able to speak, may even be able to imitate and repeat sounds, but will be unable to understand when spoken to.

Similar forms and varieties of amnesia may occur in other kind of memory representations, where the nucleus of the moment consists of presentations, coming from other senses. *We should in all of them discriminate between the memories of the same sense proper and*

those of the associated memories. The memory representations that are of the same nature with the nucleus of the moment, namely, the sensory presentations are different in kind from the associated memory representations, unlike in nature of their sensory origin.

In case of amnesia of kinaesthetic representations, the moment is unable to carry out its motor reactions and adaptations. If the disaggregation is not of the absolute type, but rather of the psychopathic, functional type, whether reproductive or complete, the patient is in a condition that looks very much like paralysis, although the patient is actually not paralyzed; in other words, the state is one of aboulia.

The amnesia may be in relation to special movements, or to special organs of the body, then the motor memory is affected. In all these forms of amnesia a part of life-experience is gone,—the patient's life experience relating to a special sense is lost.

It must, however, be emphasized that if the amnesia is of a psychopathic nature, the lost content is present in a dissociated form in the subconscious, and can be brought to the surface, if the patient is put in subconscious states and subjected to psychopathic methods of investigation. The pathological process in special amnesia is concomitant with functional dissociation in the sensory or motor areas.

In the different forms of special amnesia we must differentiate between the form of dissociation of representations of a given quality from other representations, unlike in quality, and the form of dissociation of representations from their own sensory presentations. The first form of disaggregation may be termed conveniently *representative disaggregation,* the second

form *presentative-representative disaggregation.*

In the representative forms of disaggregation other qualitatively unlike representations are absent and the presentations with their qualitatively appropriated representations lose their *meaning.* Sensations can be mentally reproduced, or what is the same represented, but they do not awaken in the patient's mind any associated representations, coming from other sense organs, and hence there is no knowledge of the meaning of the external stimuli. Objects, affecting this particular disaggregated region of mental life, are not recognized, and the patient in this direction may be regarded as *psychically blind or mentally anaesthetic.*

In the presentative-representative form there cannot be even a reproduction of the sensory stimulation, the sensation cannot be reproduced, it is gone and lost as soon as the sensory process ceases. In this respect the form of consciousness reverts to the lowest type, that of desultory consciousness. The patient falls in a condition in which his mental life becomes inaccessible to stimuli, coming through this particular affected mental system. Although sensory elements are awakened each time as stimulations occur, no accumulative process takes place, and the patient's psychic activity in this particular direction loses all plasticity. The type of moment-consciousness reverts to the extreme rigidity, characteristic of the reflex type of moment-consciousness.

Localized amnesia may be characterized also as temporal amnesia. It is forgetfulness of a certain content in time past. The patient, for instance, may forget the experience of a day, of a month, or of a number of years. The memory for experiences before and

after that time remains intact. The lapses can be exactly located in time.

Usually such a localized amnesia occurs after some intense shock of a disaggregative character. This form of amnesia is characteristic of psychopathic states. Psychopathic amnesia is of the type of localized amnesia and involves the memories of events that have occurred just before, during or some time shortly following the trauma.

More often the lapse is for the time just preceding and during the attack. The reason given by Ribot is that the experiences preceding or during the attack had no time to become organized, because the nutrition of the cells was disturbed by the attack. This explanation, however, is hardly tenable, as the cases of psychopathic amnesia really show that the experiences are present within the subconscious. It is more probable that recently acquired memories having few associations can be easily disaggregated and fall into the subconscious.

Systematized amnesia is somewhat like systematized anaesthesia in that the forgetfulness is in relation to certain events only. Events of certain character are forgotten,

In periodic amnesia the lapse of memory occurs periodically at regular or irregular intervals. The amnesia may each time be of the same content; again there may be periodic amnesia where the forgotten content varies. A definite experience may be forgotten at certain intervals: thus for instance a woman may forget at certain intervals that she is married, that she has given birth to a child, etc., or the attack of amnesia may each time involve a different set of experience. The first form may be termed *persistent periodic am-*

nesia, while the second form may be termed *variable periodic amnesia.* In cases of variable periodic amnesia the lost content is usually of a localized nature. Experiences of certain times are forgotten, consciousness is connecting and synthetizing its experience, leaving out definite links.

Alternating amnesia is of an oscillating nature, the lost content is oscillating sometimes coming up to the surface of consciousness and sometimes lapsing, falling back into the subconscious. Alternating amnesia may be of a systematized or of a localized nature. In either case the content is always oscillating and varying. In the forms of alternating amnesia the memory synthetizes certain links of experiences, while others are altogether omitted from the synthesis, consciousness bridges the missing links just as if they never existed for the patient.

After a hypnoleptic attack these synthetized memories subside or lapse into the subconscious while the omitted memories emerge also in a synthetized form. Here the former memories constitute the omitted links. It may, however, be that after an attack the whole chain of experiences becomes complete. In such cases, however, the patient though regaining the lost experiences, does not recognize them as belonging to himself, he regards them as experiences of the life of another person.

The oscillations of forgotten content in alternating amnesia may be represented by the following case: At the end of 1890 a crisis or disturbing event occurred in the life of the patient and during 1891 the experiences of 1890 were forgotten, while in 1892 the experiences of 1890 revived while those of 1891 were forgotten.

In 1893 the experiences of 1891 were revived while those of 1890 and 1892 were lost. In 1894 the experiences of 1890 and 1892 were once more revived, while those of 1891 and 1893 were forgotten. In 1895 the events of 1890, 1892 and 1894 were forgotten while those of 1891 and 1893 were revived. In 1896 the experiences of 1890, 1892 and 1894 were remembered while those of 1891, 1893 and 1895 were forgotten or rather, had subsided into the subconscious. The experiences of 1890, 1892, 1894 and 1896 were bridged over in synthesis and were made contiguous, as if the omitted links of 1891, 1893 and 1895 did not exist. In the same way the experiences of 1891, 1893, and 1895 were synthetized, while the lapse of 1890, 1892, 1894 and 1896 was not appreciated as a gap by consciousness. When subconscious experiences recur they form a synthesis, are bridged over and are contiguous, while the ones that have subsided become the omitted links and are in their turn regarded as if not existing. If they do come to memory, they are of a purely reproductive nature, without any element of recognition.

The form of progressive amnesia consists in a progressive loss of the content of memory. This form of amnesia probably seldom, if ever, occurs in the psychopathic state. It is, however, common in certain forms of organic disease, such as general paresis, senile dementia and all forms of secondary dementia.

Etiologically considered, amnesia may be classified into four types:

I. Traumatic Amnesia.
II. Toxic Amnesia.
III. Autotoxic Amnesia.

IV. Emotional Amnesia.

Traumatic amnesia is due to some intense mechanical stimulus affecting the brain. The character of the amnesia is determined by the seat of trauma, the disturbance being of a psychopathic nature, namely, a disaggregation in the interrelation of the moments, the content falling into the subconscious and is present in a lower type of moment-consciousness which can be revealed by different psychopathological methods.

In psychopathic amnesia the character is not determined by the trauma alone, but also by the nature of the circumstances and conditions surrounding the patient during the time of the trauma.

Toxic amnesia is due to some toxic agent taken into the system. Thus in alcoholism the patient may forget events occurring during the state of intoxication. In my experiments with chloroform or ether gaps, lapses appeared in memory. These memory gaps are of a systematized or of a localized nature. In toxic amnesia the patient on emerging from the state of intoxication often forgets his conscious experiences during that state. The lost memories, however, may sometimes be revived in subconscious states.

Amnesia is autotoxic when the toxic agent is developed periodically, regularly or irregularly, by the organism itself, and may be due to defective elimination of waste products. Attacks of this kind may be sometimes seen in the psychic equivalent attacks of epilepsy, found interspersed in a number of typical epileptic attacks. The various forms of periodical and circular insanities are due to such conditions. To autotoxic amnesia also belong the amnesias or lapses of memory observed during severe headaches.

Amnesia may be caused by some strong emotion, and is termed emotional. The character of this form of amnesia is determined largely by the nature of the event and also by the character of the emotional disturbance.

The general law of amnesia is disaggregation from the higher to the lower, from the complex to the simple, from the less familiar to the more familiar; the loss of psycho-motor activities is in the order of their complexity and familiarity. Thus, for instance, habitual movements or movements required in carrying on daily life existence are last effected by the process of disaggregation. The very lowest forms of activity, such as reflex action, remain unchanged.

The order of disappearance again depends also on stability, on time element, on recency and on repetition of the activity of the organized functioning systems. The ones first organized and more often brought into activity will be the more stable and will longer resist the process of disaggregation.

Aboulia consists in a deficiency of will power. The patient is unable to determine upon any definite movement or action, especially when the mind is concentrated upon it. From the very nature of the aboulias it is evident that they relate to motor phenomena. The lack of resolution of the patient is due to general mental depression brought about by subconscious experiences.

Anaesthesia and motor disturbances are associated with aboulia. In aboulia a certain action becomes difficult to execute when the patient desires to perform it, the patient cannot resolve or decide to perform a certain act, no matter how strong his desire be.

There is in aboulia a disaggregation in the mental systems forming the personality, the given wish or de-

sire cannot be fulfilled; no impulse can apparently be transmitted from the higher ideational to the motor centres. If, for instance, the patient is told to perform a certain act, he finds it difficult or impossible to execute it. If the subconscious self, however, is appealed to, the action or movement can be performed with ease. This differentiates aboulia which is of a psychopathic character from organic motor disturbances, since in aboulia the patient can really perform the act when his attention is diverted, while in organic disturbances there is a permanent inability to execute movements or acts.

The aboulias may, like the anaesthesias, be divided into:

I. Systematized.
II. Localized.
III. General.
IV. Special.

In systematized aboulia certain forms of activity cannot be voluntarily performed. Certain actions which the patient can perform in relation to all other objects cannot be executed by him when these actions relate to a definite class of objects.

Specialized aboulia is present when the patient cannot say or write a certain word or do a definite act under *special* circumstances. The power of forming the resolution seems lost. The performance of the certain specialized act is associated with some past inhibitory experience, producing a disaggregation of a certain mental system from the voluntary, controlling centres.

The inability may relate to the pronounciation of a certain word or phrase or to the writing of a certain word under certain circumstances, such as the presence of certain persons. The patient may be, for instance, una-

ble to greet or bid adieu to certain persons, but finds no difficulty in expressing this to other persons. Again the patient may be unable to do a certain action under some special conditions only, thus he may be unable to write upon a particular table or when seated in a particular chair.

Localized aboulia has relation only to a particular member of the body. This is not due to local disturbances, but there is general apathy in relation to movement of this particular member. The member affected seems to be entirely disregarded by the patient. As long as the patient's attention is diverted from the affected limb, its use is carried on normally, but when the patient's attention is directed toward the member, its voluntary control is almost entirely suspended. In short, the patient cannot move a certain limb at will. The deficiency is more marked when the patient is directed to move the affected limb.

In general aboulia, there is a general paralysis of the will, or of voluntary activity in general. In this as in other forms of aboulia, the patient performs acts subconsciously, but cannot do so voluntarily, when his attention is fixed upon them, or when directed to by others. Under emotional excitement the aboulic state is, so to speak, broken through, and the patient performs all acts normally. The aboulia may at times go so far as to make it impossible for the patient to make up his mind to fall asleep or to arouse himself.

We have pointed out that the aboulia may be general, special, or localized. It may involve all kinaesthetic memories or only some systems of them relating to the activity of a particular member, or to certain definite activities. The patient is unable to execute

movements or particular sets of motor reactions. The patient cannot vividly realize the motor representations requisite for carrying out motor responses to the external environment, he does not remember how to act; in other words he forgets all about these actions, and when attention is drawn to the action, the consciousness of lack of execution may become an additional factor in bringing about a further disaggregation, the patient thus becoming even more helpless than before.

By different psychopathic methods, however, it can be easily shown that the kinaesthetic memories are not really lost, but can become manifested under favorable opportunities; in other words, they are still present subconsciously.

More often, however, the amnesia as to kinaesthetic memories is in relation to special, organized systems, such, for instance, as writing. The patient loses all ability to write, although he may be able to read written characters; he has all the memories associated with the visual presentations of the letters, but the representations of kinaesthetic sensations are absent. The kinaesthetic sensations themselves, however, may be present and can be brought about by proper external stimuli, but they do not awaken kinaesthetic representations.

Once more we must point out the fact that the phenomena manifested depend on the depth of the disaggregation process. If the process distintegrates the kinaesthetic memories themselves and brings about their total effacement, then there is an absolute and often an irretraceable loss of content and function, unless other moments closely related, unaffected by the process of degeneration, take up the function of the effaced moments.

Should, however, only a disaggregation or dissociation of the systems take place, then the dissociated aggregates sink into the background of consciousness or into subconsciousness, often giving rise to subconscious manifestations. The patient has all the kinaesthetic representations, seemingly lost, but as a matter of fact he is really able to carry out the movements, as it can be shown by different psychopathological methods, only the patient has no power to bring the movements into function. The content is present, the function is absent.

The patient has forgotten how to associate and utilize these systems of kinaesthetic representations. We may say that the patient has not the *will* to remember them. *This fact of not having the will is the characteristic trait of psychopathic maladies,* having as their background disaggregation of constellations of mental systems with preservation of content in simpler systems, subconsciously present. From this standpoint we may say that *all psychopathic diseases are at bottom amnesias,* and that *all psychopathic amnesias are in a certain sense aboulias.*

Aprosexia is a condition in which the patient is unable to concentrate his attention. The patient appears to be in a state of indifference to all forms of activity. He cannot fix his attention steadily upon anything, he is in a state of apathy. The patient's attention may be suddenly awakened, but he soon again lapses into his indifferent state. The events of life do not interest or move him. If a book is given to the patient or if something is read to him, he appears not to understand its meaning, simply because the attention is not fixed upon it.

The psychomotor disturbances, such as anaesthesia, convulsive movements, etc., usually associated with aprosexia are disregarded by the patient, as if the derangements related to a different person. The attention can sometimes be temporarily fastened on some interesting object or on some amusement in which the patient is ordinarily specially interested. In this state, however, the patient cannot take cognizance of any other event or activity taking place about him, the attention being narrow and limited.

In such states of narrowed attention the patient becomes highly suggestible. The attention is often so narrow and the available energy appears to be so low that a drawing off even of a small amount of energy results in neuron disaggregation, thus giving rise to a state of suggestibility. So great is the tendency to neuron disaggregation that even the momentary use of an extremity may give rise to motor or sensory paralysis, in the same way asthenopia may follow an attempt at reading.

In aprosexia the least fatigue, the least concentration of attention, brings about states of disaggregation, such as hypnoidal, hypnoidic, convulsive, somnambulic or sensory disturbances. This occurs especially when the act of concentration of attention is accompanied by emotion. This is due to the fact that in emotion there is a large draught on neuron energy, giving rise to a more extensive disaggregation with its concomitant psychomotor manifestations.

In aprosexia it is difficult for the patient to acquire new mental material. His life seems to be arrested, it does not receive additional experience. What is acquired is easily forgotten.

Aprosexia is really a form of aboulia. It is a lack of will-power to concentrate the attention on a thing, or circumstance or definite purpose. Aprosexia is rather frequent in different degrees of intensity in psychopathic states, but does not by any means constitute a fundamental trait of psychopathic diseases. Indeed, *in some forms of psychopathies the power of concentration of attention may be very great.*

Aprosexia may give rise to fixed systems of ideas. Ideas or emotions that have become habitual and, therefore, more stable will in the struggle of the disaggregated systems for the possession of the narrowed attention recur more often and obtain possession of the patient's mind, finally becoming fixed, in the form of *fixed ideas.*

The forms of psychopathic fixed ideas differ from the fixed ideas in the insane. In the latter the fixed idea becomes the predominant feature of the patient's attention and around it are grouped other ideas more or less dependent upon the fixed one, often giving rise to the formation of a delusion; in the psychopathic form the fixed idea rises up into the patient's mind more or less automatically. In aboulia, in the amnesias and other psychopathic states the lost experiences and activities are not absolutely lost, but are present in the subconscious.

In the organic diseases these experiences and activities are absolutely lost and cannot be reproduced. The presence of the lapsed states and acquirements can be proven to exist, subconsciously, in all psychopathic cases. The patient, though apparently not fixing his attention in psychopathic aprosexia, really does so subconsciously and the experience lost to the upper con-

sciousness is retained by the subconscious. The presence of these experiences and activities in the subconscious may be brought out by automatic writing, hypnosis, and other psychopathological methods.

The general law of psychopathic disaggregation is *what is lost to the upper consciousness is present in the subconscious.*

CHAPTER XXVI

FIXED IDEAS, MORBID IMPULSES, AND EMOTIONS

THERE is a form of mental derangement to which the term imperative concepts or insistent ideas is applied. From some subconscious source, unknown to the patient, an idea rises into consciousness with a persistency which the patient cannot overcome. Thus a number or a sentence may repeatedly and at various times force itself into the mind of the subject. The person may be engaged in some entirely different thought when suddenly this idea or concept forces itself into the mind and crowds out all others. This is usually a source of great discomfort and inconvenience to the patient, as it interferes greatly with his mental activity.

These forms of mental disturbances may occur in otherwise mentally normal persons, but more especially in those of neurotic predisposition. The pathology consists in the dissociation of a persistent well organized system, present in the subconscious and then coming into consciousness in the form of a state more or less hypnoid or hypnoidal in character.

Morbid impulses are uncontrollable manifestations of affective, ideo-motor states. An unaccountable impulse to do a certain thing suddenly takes possession of the patient's mind, an impulse which may be so overwhelming that restraint is almost impossible. The impulse as soon as it appears in consciousness may immediately pass into action. It is a form of emotional

automatism. Thus a patient confined in an asylum met an attendant with whom he was on pleasant relations. The patient at once and without reason or warning suddenly struck the attendant a blow, felling him to the ground. The patient immediately after expressed great regret and sorrow at his deed. The impulse to strike was simply irresistible.

Morbid impulses are of the nature of hypnonergic states, or of post-hypnotic suggestion. Like the latter, they consist in a dissociation of ideo-motor systems from the upper consciousness, but present to the subconscious. They may emerge at regular or irregular intervals and work themselves out automatically. Morbid impulses differ from hypnonergic or post-hypnotic states, manifested in the hypnotic subject and in different forms of psychopathies, in that they are better organized, more persistent, and usually of a character harmful to the patient or his social environment.

To this class also belong the phenomena of automatism sometimes termed imperative movements. The movements are often automatic, the consciousness accompanying them is disconnected from the general stream of consciousness. The patient may be conscious of what he is doing, but continues the same movement over and over. Thus some will move in a certain direction, as in a circle or in a certain figure; others will repeatedly walk to and fro, others move their lips, etc. Similar movements are sometimes found in idiots and imbeciles. Imperative, automatic, subconscious movements occur in hypnonergic states and also in the different forms of psychopathic states.

Under morbid emotional states may be classed all those states in which an apparently unaccountable emo-

tion appears, not adapted to the particular, external environment. Some of these states may be revivals of primitive emotions, adapted to a former environment. Most of such morbid emotional states, however, are due to experiences, often traced to early childhood, experiences which have become dissociated from the upper consciousness and formed into a stable, well organized system, emerging from the subconscious under certain conditions. Such states usually occur in those of neurotic predisposition and under circumstances which favor such a dissociation.

In agoraphobia there is an intense and apparently unaccountable anxiety when remaining in an open space, or in an open square. The anxiety may become so great that the patient becomes almost paralyzed and unable to move. This state some consider as an atavistic, racial, subconscious manifestation, dating to the time when anthropoid ape was living in a forest and for safety avoiding open places. A similar condition we find in wild animals and even in the domesticated cat. The cat always avoids open spaces, seeks to remain near a hedge or fence when she goes about. It can, however, be shown that the phobia is due to some association formed in early childhood.

Claustrophobia consists in a morbid anxiety of remaining in closed places, such as a small room or closed vehicle. This state some consider as being atavistic in its nature, and going back to the time when primitive man or animals lived in caves having many exits for their escape. It can, however, be proven that claustrophobia, like agoraphobia, is due to subconscious experiences of early childhood.

We not infrequently find in the lower classes

of European or Asiatic populations a fear of entering into dark, deserted places, or uninhabited houses or passing through a graveyard at night, on account of associations formed in childhood about ghosts and spirits. This is true not only of superstitious persons, but also of the highly educated who in daylight ridicule the superstition, but when in darkness are unable to overcome their intense emotion.

Various terms have been applied to these morbid fears, and the number of phobias may be endless, pertaining to all sorts of ideas. Among the most common beside those above mentioned, are phobia or fear of heights, monophobia, fear of solitude, misophobia or fear of contamination, or defilement, aichmophobia or fear of sharp objects, crystallophobia or fear of glass, metallophobia or fear of metals, anthropophobia or fear of men, and so on.

Morbid propensities are morbid impulses, associated with intense morbid emotional states. The patient has an impulse to do a certain act, but the act is not automatic; he is fully conscious of the impulse and has intense satisfaction and sometimes great pleasure in the fulfillment of it. Morbid propensites may be of great variety, relating almost to any acts or objects. They may be of a harmless nature, or they may be dangerous to life and property.

Desires and emotions play an important part in life, and may give rise to morbid propensities. An example of the harmless variety may be the desire to collect all forms of newspapers, or old shoes, clothes, etc. Morbid propensities may take the form of desire to set fire to buildings (pyromania), or to steal (kleptomania), or to kill (homicidal mania), morphomania, alcoholism,

onanism and many other forms.

The sexual propensities, on account of their sensational character, have of late attracted undue attention. Freud and his school have made an unsuccessful attempt to identify all psychopathic states with sexual propensities. The Freudian school forces the facts by means of a mediaeval or Chaldean symbolism, by means of a revival of the superstitious symbolism characteristic of astrology, alchemy, chiromanthy, or palmistry, and onieromancy. Oneiromancy is specially the stronghold of this school of occultism.

All those various states, impulses, emotional conditions and morbid propensities can be traced by psychognosis to subconscious experiences, originated in early child life.

PART III

PSYCHOGNOSIS AND DIAGNOSIS

CHAPTER XXVII

RECURRENT MENTAL SYSTEMS

WE can pass now to a consideration of functional nervous and mental diseases which I have described by the term *"recurrent mental states."* Under recurrent psychomotor states I include insistent ideas, imperative concepts, persistent or periodically appearing emotional states, irresistible impulses, as well as the psychomotor attacks of an apparently epileptic character which may be designated as "psychic epilepsy." All these various states are found in many a symptom-complex of the insanities, but they are still more often met with in the functional mental and nervous diseases,—in functional psychosis. In fact, in many forms of hysteria, in many types of neurasthenia, or of the more fashionable "psychoasthenia," recurrent psychomotor states constitute the main and often the only symptoms of the malady.

The recurrent psychomotor states, with their great wealth of symptoms, appear almost mysterious in their onset and origin; they flash lightning-like on the patient's mind, get possession of it, then disappear, only to reappear on some other favorable occasion. Others persist in consciousness, with but slight remissions, and keep the patient in a continuous agony. The patients are aware of the absurdity of the ideas and impulses, but they are powerless to resist them. They regard such onsets somewhat in the same way as the epileptics regard their attacks, which set in against will

and consciousness, and which are not subject to control. I do not mean by it to indicate that all those psychic attacks are of an epileptic origin, but I wish only to point out the fact that there is some analogy between recurrent psychomotor states and epilepsy, inasmuch as both of them come on as sudden, uncontrollable attacks.

It is true that in some cases we can drive the analogy more closely, because in some of the forms of recurrent psychomotor states we observe somewhat similar symptoms. We find the presence of a distinct aura, sensory in character, a sense of oppression, and sometimes a profound disturbance of consciousness during the attack, the patient occasionally being insensible to external stimuli. In some cases we even find a dazed state of consciousness, headache, and a condition of extreme fatigue after the attack is over.

This resemblance, however, is but a superficial one. Recurrent psychomotor states differ widely from epilepsy. Many writers are deceived by this superficial resemblance and regard such attacks as "larval epilepsy," as "psychic equivalent of epilepsy." Such a view is entirely unjustified on a close scientific analysis of the facts. The most that can be done is to draw an analogy between the attacks of insistent states and the attacks of epilepsy, but we must bear in mind that analogy is not a safe method, as one may find himself reasoning on the same lines with the Esquimaux who regards glass as a kind of ice.

It can be shown by a rigid study of the cases of recurrent psychomotor states that they have nothing to do with epilepsy, although they may be associated with it. A study of the cases of recurrent psychomotor

states reveals the presence of subconscious activities which become manifested as insistent ideas, uncontrollable emotions, irresistible impulses and various psychomotor states closely simulating epileptic attacks. It is from this standpoint that we may designate such simulating attacks as psychic epilepsy, not because they are psychic attacks, "equivalents" of real epilepsy, but they are pseudo-epileptic attacks of a purely psychic origin,—they are manifestations of *subconscious activities.*

One general characteristic of these psychomotor states is their *recurrence* with the same or similar content of consciousness and with the same or similar motor reactions. The patient thinks, feels, wills and acts the same way. *Subconscious dissociated states belong to the type of recurrent moment consciousness,* a type characteristic of the lower forms of animal life, responding to external environment with the same adjustments, with the same psychomotor reactions. This biological type of mental activity is described by me in *"The Foundations."* From this standpoint, we may regard recurrent psychomotor states as a reversion to the lower forms of mental life.

The suddenness of the attack, the uniformity of the manifestations of the symptom-complex, the uncontrollable, overpowering effect on the patient's personal consciousness are all due to the same underlying factor of dissociation of the patient's subconsciousness. A disaggregated, subconscious life gives rise to recurrent psychomotor states,—to insistent ideas, imperative concepts, uncontrollable emotions, irresistible impulses, and to states of "psychic" epilepsy.

There are many cases of insistent ideas and irresist-

ible impulses which seem to contradict this law of uniformity and recurrence of psychomotor states which are seemingly of an evanescent character,—they are like stray comets coming out of the depths of space only to disappear again and never to recur. A close investigation will reveal the fact that the contradiction is but an apparent one. The various insistent ideas and impulses can in reality be referred to some few fundamental states persistently present in the subconscious, and only appearing under different forms in the personal consciousness; they are like so many leaves and fruits of a single plant whose roots are planted firmly in the subsoil of mental life. We may then say that all insistent mental states take their origin in a disaggregated subconsciousness and are periodic or recurrent in character, and as such may well be designated as *recurrent, psychomotor states.*

We may possibly get better oriented in the vast domain of insistent mental states, if we make some provisional classification. We may classify insistent mental states according to content and form. Classified according to content, we may divide insistent mental states into:

1. Conceptual or ideational.
2. Ideo-motor.
3. Sensory.
4. Sensori-motor.
5. Motor.

According to form they may be classified as:

1. Desultory.
2. Systematized.

In the conceptual forms it is the general, abstract idea that keeps on troubling the patient, such as the na-

ture of God, of Christ, or the nature of the Trinity, and so on. The insistent ideas are here more or less of a metaphysical character. The patient does not feel satisfied with any answer. In many different ways the patient tries to raise difficulties to all kinds of possible answers. He tries to find loop-holes to escape from any solution, so as to have the question remain in full force.

Were it not for the intense anxiety which is sometimes associated with such states, one would say that the patient delights in the mere process of questioning. He wants the problem, but refuses obstinately to accept the solution. In reality, however, it is not a matter of delight to the patient to persist in a state of problematic consciousness, so to say. Logical as the solution may appear to the patient, the problem is ever forced on the patient's personal consciousness, for it is the work of *dissociated states, having their origin in recurrent systems or settings of a disaggregated subconsciousness.*

The insistent ideo-motor states refer to some act or motor activity which the patient has to reason out so as to know all the *pros* and *cons,* such as, whether it is right to play cards, or read a Sunday newspaper, or to visit theatre, or to travel on a Sabbath day. The patient gets lost in argumentations and discussions. He employs the most subtle casuistry, but he always meets with difficulties, never coming to any definite conclusions. His mind is set entirely on the *thought* of the action which is never to become a reality. The patient's will is thus paralyzed, he is in a state of doubt, indecision and hesitancy. The patient cannot accept any decision, however logical, as the same problem ever surges

up in his mind with renewed vigor. What avails the patient's reason against the blind dissociated forces of systems or 'settings' as some prefer to put it, stirring in the depths of a disaggregated subconsciousness?

The insistent sensory states comprise a wide domain of manifestations. All the insistent emotional states could be classed as sensory, since an emotion may be regarded as a massive complex of sensory elements coming from various parts of the organism.

Under this head we may include the functional states of depression and anxiety as well as the various phobias. Here also belong the various pains, headaches, hemicranias or migraines, when forming the main or central symptom of functional psychosis. The sensory symptoms of the hysterias, such as the anaesthesias and hyperaesthesias, belong to the same category.

All those states present the typical characteristics of the recurrent moment-consciousness. All of them can be referred to dissociated experiences, to insulated mental systems, 'settings,' 'complexes' persisting in a disaggregated subconsciousness.

What is manifested as the attack with the whole symptom-complex characteristic of it can be traced by a rigid analysis to an original experience which has occurred during the process of dissociation. The dissociated subconscious experience, system, 'setting,' 'complex' keeps on recurring as an attack. *What goes under the name of hysterical stigmata can in reality be traced to dissociated, subconscious experiences.*

During the attack the patient may preserve his personal consciousness fully or but partially. In such a case it appears as if two centers of consciousness are at work, one beside the other and one independent of

the other. The patient may be aware of the new independent forces which are foreign to him, but which have apparently taken possession of him in spite of himself. The self seems to be torn in two, and consciousness is doubled. A new, incipient, parasitic personality is being formed in the recesses of the subconscious, a parasitic personality having a will of its own and no longer subject to the patient's personal control.

In some cases, the dissociated systems forming the parasitic personality may become fully manifested without the patient being aware of it. We have two personalities in one organism working side by side, each apparently ignoring or not taking cognizance of the existence of the other.

In other cases, again, the subconscious personality seems to take full possession of the principal focus of consciousness, the parasitic personality swamps the personal consciousness which sinks below the level of active mental life, becomes submerged, and no longer enters into active relations with the external environment. During such an attack the character of the person is changed and the memory is not bridged over, as it is in the course of the normal associative activity, the functional recognitive elements are missing, consciousness may know of those experiences, but does not know them as its own.

The phenomena of recurrent or insistent mental states range through various stages of dissociation; they can all by analysis be referred to a condition of disaggregated, subconscious, mental systems.

The sensori-motor and purely motor manifestations are closely interrelated; sometimes the sensory and

sometimes the motor symptoms predominate in the total symptom-complex, when examined from a clinical standpoint. Here belong the various functional or hysterical, visceral disturbances, hemiplegias, paraplegias, paralyses and contractures, also the functional tremors of psychic origin, all the states of "epilepsy" of the psychic type known under the name of "psychic epilepsy" which so closely simulate typical epileptic attacks. Finally, to the same category belong the various types of tics.

The dissociated subconscious states may appear in consciousness in a disconnected, disseminated form,—they may appear as broken-up sentences, phrases and sounds, or as images having no relation with one another; they may come and go in great confusion, often producing a chaotic condition in the patient's mind. The ideas keep on chasing one another, turning in circles without any rhyme and reason until the patient feels tired, exhausted, and dazed by the kaleidoscopic whirl of the storm of ideas. Such insistent states may be designated *as desultory*.

Quite often, however, the recurrent states are paranoidal in form. The ideas and feelings are well organized. The patient can give a clear, interconnected account of his insistent states. In fact, the insistent states stand out in the patient's mind so clear and definite that the patient can give a detailed analysis of all the minutiæ of the condition. It seems as if his gaze is almost microscopically distinct, the least relation and outline are noticed.

The insistent mental states seem as if fixed, so that the mental picture is strongly impressed on the patient's consciousness, and the vaguest detail cannot escape

scrutiny. A wealth of associations is grouped around the central experience of the recurrent mental states, which form nuclei of highly organized groups of mental systems, arranged in an orderly array and logical relationship, forming an organic whole of a high degree of organization, the nature of which cannot be understood without a thorough exploration of the subconscious. *Such recurrent mental states may be described as systematized.*

All those various manifestations can, by close investigation into the patient's subconscious life, be traced to active dissociated systems, having their origin in a disaggregated subconsciousness.

CHAPTER XXVIII

TRAITS AND THRESHOLDS OF DISSOCIATED SYSTEMS

ONE point is worth while emphasizing, and that is the fact of *recurrence,* so highly characteristic of the activity of dissociated subconscious states or moments-consciousness. The dissociated moment rises from the depths of the subconscious regions, oversteps the threshold of consciousness, manifests itself with an irresistible energy, throws the normal psychomotor reactions, for the time being, into a state of disorganization, and then lapses from consciousness, only to be resurrected under conditions favorable to its activity. Such dissociated, subconscious activities I describe under the term of *recurrent moment-consciousness.*

This characteristic of *recurrence* is of great importance in psychopathology, as it brings the subconscious activities under one perspective view, gives an insight into their nature and mode of manifestation; and *from a biological standpoint brings them in line with the mode of action of the lower mental types, which respond to special stimuli of the external environment with the same amount and quality of sensori-motor reactions.*

The sense of reality is usually described, by writers on the subject, as not being affected. This is not the case. A close study of the facts shows that the insistent mental states come with an intensity of the sense of their reality almost directly proportional to the in-

sistence of the mental state, a reality which is truly delusional, or even hallucinatory, in character. This is especially true of the systematized, recurrent states of the sensory type. The dissociated subconscious states refer to a *past reality, now subconsciously real.* In the ideational or conceptual forms the sense of reality appears to be weakened, because of the weaker insistence of the ideational elements as contrasted with the sensori-motor elements.

Another important and striking trait of the dissociated states is the *violence,* I would almost say the vehemence, with which they become manifested; they reveal an amount of energy which similar states do not possess in the normal condition, when the personal consciousness is in active relation with the external environment. The energy displayed is more than the individual is capable of putting forth under ordinary conditions of life.

The *sudden, mysterious onset* of subconscious states, foreign to the whole character of the individual, as well as the *sudden display of energies,* until now unsuspected in the person, make those states appear as mystical in the eyes of the populace and the superstitious. No wonder that the church has regarded subconscious activities as supernormal and miraculous, and either ascribed them to divine powers, or to satanic agencies, demoniacal possessions and obsessions. In our own time we have men devoting time and energy to the investigation of the supernormal nature of subconscious phenomena.

In my previous works on the subject I have discussed the energy and violence of the eruption of subconscious forces as due to *lack of inhibitions.* This

follows from the very nature of dissociation. Dissociated subconscious systems being released from all relations with other systems and groups of mental elements, being let loose, so to say, from all associative bonds, will naturally display an amount of energy, unusual for similar systems under the normal conditions of mental association.

Still the phenomena of dissociation point to facts of a very important character. They point to an extremely important principle which I term *'the principle of potential subconscious energy,'* a principle which is of importance from a theoretical as well as from a practical therapeutic standpoint. Meanwhile, we should keep in mind two characteristic traits of subconscious phenomena as manifested by dissociated states,—*recurrence* and *latent energy*.

It may also be well to bring out another point of interest which holds true of the various types of insistent mental states,—*they cannot be understood in the light of conditions under which they occur, or truer to say recur, since they bear no relation to their immediate environment, but to that under which the states have originally taken place.* Unlike mental states of the personal consciousness characterized by direct adjustments to the *present* conditions, the insistent subconscious states are adjustments to *past* conditions. *They have no meaning in the present.* May we not describe recurrent states as *resurrected moments?*

The theory of thresholds advanced by me in my former works accounts for the phenomena of dissociation with their manifestations, the recurrent mental states. The concept of threshold is not new,—it is at the foundation of physiology and psychology. The phy-

siologist is familiar with the concept of threshold in his experimental work, and the same holds true in the case of the experimental psychologist. The theory of thresholds as advanced in my work is simply an extension of the work of the physiologist and of the psychologist to the domain of abnormal mental life.

It may be well to call attention to the recent tendency of introducing metaphysical considerations of teleology and of meaning into the phenomena of abnormal mental life. Meaning is forced on abnormal mental life whether it is there or not. 'There is a reason' it is claimed and a reason must be found and expressed in teleological terms of purpose, wish, desire, and meaning. I must say once for all that they who try their ingenuity and fanciful symbolization and mental conflicts in order to squeeze out some important meaning out of psychopathic symptoms in the present life adjustments of the patient miss the essential point of psychopathic states. Psychopathic symptoms are essentially meaningless.

Psychopathic symptoms are like the actions and reactions of a hypnotized subject or of a somnambulist whose adaptations are to an unreality, to a world fanciful and certainly widely different from the actual surroundings. To search for a present meaning and for an adaptive purpose in the symptom-complex of psychopathic states is to misconceive their nature.

Psychopathic states in the individual closely correspond to outlived, social customs and meaningless religious rites and traditions which society keeps on practicing in reverence and which some thinkers attempt to rationalize, pointing out that the meaningless customs are fraught with a hidden, symbolic meaning. As Dr. Frazer puts it well: "The history of religion is a long

attempt to reconcile old custom with new reason, to find a sound theory for absurd practice." The same holds true in the case of the phenomena of abnormal mental life. There is no symbolic or hidden meaning in the symptoms of psychopathic states for the simple fact that they have no meaning at all.

The symptoms of psychopathic states can only be understood in the light of the patient's past life experience, but they have no meaning in the present. Psychopathic symptoms are recurrent reversions to a former life period in the patient's life, a period which has gone, which has no further existence, but to which psychomotor reactions keep on taking place. *The psychomotor reactions of the pathological symptoms-complex have no meaning in the present life,* because the conditions, circumstances and relations are no longer in existence.

We find the same states in animals of low intelligence, when the conditions of their existence are suddenly changed, the animals keep on making adaptations which are now useless, meaningless, and even harmful, they make adjustments to conditions of a former environment which is no longer in existence. The duckling goes through swimming motions in a dry pan; the squirrel keeps on hiding nuts in the cage, dining room or the parlor; the beaver builds a dam with books in the library. Psychopathic affections are like the heliotropism of the moth attracted by light, burning its wings and perishing in the flame. The psychopathic symptom-complex is a survival from an ancient, long past period of the patient's life, a period still subjectively surviving in the patient's subconscious life, giving rise to psychomotor manifestations which are meaningless, useless, harmful, and therefore pathologi-

cal. Psychomotor reactions are psychopathic, not because they have a hidden meaning, the mystical symbolism of which the physician is to read by the aid of a deep, cabalistic 'interpretation of dreams and psychoanalysis,' but *the symptom-complex and its reactions are useless, meaningless, and even absurd.*

It cannot be too much insisted on the fact that *absence of meaning and lack of adaptation are essential characteristics of psychopathic states. Psychopathic states are disease states, not because they have meaning, but just because they are devoid of all meaning.* Like tumors, cancers, infections, and poisons of the body all the significance psychopathic states possess is disease, degeneration, dissociation, disintegration with consequent suffering and mental decay.

The concept of threshold is of importance to a right understanding of psychopathic states. The concept of threshold appears difficult and complicated. As a matter of fact it is simple and easy to comprehend. We know that a certain amount of friction is necessary to ignite a match, or a definite amount of pressure is requisite to press on the electric button to light an electric lamp or ring a bell. *That amount of energy which is just sufficient to produce the effect may be termed the stimulus threshold,* the energy requisite to overcome the resistance or the release of a certain amount of energy is termed *threshold.*

It is clear that, if the energy falls below the threshold, the effect cannot be called forth. A rise of threshold would mean that more energy is requisite to bring about the desired effect. The match is harder to light, and the button is harder to press.

One of the main characteristics of living protoplasm

is its adaptability to the conditions of the external environment. External stimuli give rise to reactions of adjustment on the part of living substance. This property, known in physiology as irritability, is characteristic of all living matter, or of what Huxley so aptly describes as "the physical basis of life."

Verworn defines the irritability of living substance "as its capacity of reacting to changes in its environment by changes in the equilibrium of its matter and its energy." In other words, living tissue responds to external stimulation with some discharge of energy. The form of the discharge depends on the peculiar protoplasmic structure, according as it is muscle, gland, nerve cell, or but slightly differentiated protoplasm, such as amoeba, or bacterium. The character of the reaction to stimuli depends on the state of organization of the living tissue.

The delicacy of response of living matter to external stimuli has its limit. Very weak stimulations do not call forth any reactions. Living tissue can only be set into activity by stimuli of certain intensity. If the stimulus falls below that intensity, the protoplasm does not react. This holds true of all cells, from the simplest bacterium and infusorium to the most highly differentiated muscle-cell or neuron.

The minimal intensity below which the stimulus remains ineffective is regarded as the *threshold of stimulation.* "Exceedingly feeble stimuli" says Landois "are without effect. The degree of intensity of stimulation that originates the first trace of sensation is called the threshold of sensation or the *threshold-value.*"

The same is more clearly put by Verworn:

"Let us imagine an organism, e. g., a muscle, under

conditions in which no stimulus affects it, and let us bring to bear upon it a stimulus, e. g., the galvanic current, which varies in intensity from zero upward and can be graded easily and delicately. Then we should expect the muscle to exhibit phenomena of stimulation, i. e., to perform a contraction, as soon as the intensity is increased above O. But this does not happen. The intensity can be increased considerably before the muscle performs even the slightest twitch. Only when the intensity has reached a certain degree does the muscle respond with a contraction. From here on the contraction is never wanting and up to a certain degree becomes more energetic the more the intensity is increased. The stimulus, therefore, begins to operate only at a certain intensity, and this point is termed *the threshold of stimulation.* Below the threshold the stimulus is ineffective; above it the effect increases with the increasing intensity of the stimulus. For the different forms of living substance the value of the threshold is very different. Thus nerve-fibres are put into activity by extremely feeble galvanic stimuli while amoeba demands very strong currents. The same is true of all other varieties of stimuli in relation to the various forms of living substance."

Psychologically, we may agree with Stout that "the point at which it (the stimulus) is just indistinguishable,—so that the least increase would make it distinguishable is called stimulus-threshold."

Külpe's definition is short; "the just noticeable stimulus is technically termed the stimulus-threshold."

With the increase of stimulation the irritability of living substance diminishes,—the threshold rises. The same stimulus no longer brings about a reaction,

the stimulus must be increased in intensity before any effect can take place.

An excellent account of it is given by Verworn in his "General Physiology:"

"If a living object be stimulated by long continued, oft repeated, or very strong stimuli, after some time it passes into the condition of fatigue. The general characteristic of fatigue is a gradual decrease of the irritability of the living substance. This is expressed especially in the fact that with increasing fatigue, the intensity of the stimulus remaining the same, the result of stimulation becomes constantly less.

"We have already become acquainted with some examples of this fact in considering galvanic stimulation. If a constant current of average strength be passed through an *Actinosphoerium,* at the moment of making there begin to appear at the anode marked phenomena of contraction. The protoplasm of the pseudopodia flows centripetally until the latter are drawn in. Then the vacuoles break; and a granular disintegration of the protoplasm results, which proceeds constantly farther from the kathode during the passage of the current. This disintegration, beginning with great energy, becomes slower and less extensive the longer the current flows, and after some time is at a complete standstill. This means that the living substance of the *Actinosphoerium* becomes fatigued in the course of continual stimulation, and decreases in irritability; hence the stimulus, which at first induced pronounced phenomena of disintegration, later produces no reaction at all. *Pelomyxa* is fatigued still more rapidly than *Actinosphoerium.* Stimulation for a few seconds is sufficient to make individuals of this genus wholly non-irritable

to currents of equal intensity; a much greater intensity is then required to call out the same reaction."

The principle of variability of stimulation is of importance in the reaction of nerve-tissue. When the stimulus remains invariable, both in intensity and quality, no reaction follows.

This is clearly brought out in experiments on nerve tissue. "The electrical current," says Landois, "produces its strongest irritant effect upon a nerve at the time of its entrance into the nerve and at the time of its disappearance. In like manner any rapid increase or decrease of the current passing through a nerve has a strong irritant effect. If on the other hand, the current be allowed to pass gradually into the nerve trunk or to disappear, or the current passing through the nerve be gradually increased or diminished, the visible signs of nerve irritation are much less marked. In general, the stimulation is more pronounced the more rapid the current variation within the nerve, that is, the more suddenly the strength of the current passing through the nerve is increased or diminished." This holds true in the case of the nerve in which, as Bowditch has shown, there is little or no fatigue.

Where fatigue is present the principle of variability becomes a factor of the utmost consequence. The principle of variability of stimulation plays an important rôle in cells in general and in nerve cells in particular where fatigue easily sets in and the threshold is raised with the continuation of the stimulation and with the successive discharges of cell energy. *Variability of stimulation and fatigue influence the fluctuations of thresholds.*

What is true in regard to unicellular organisms, such

as the amoeba and cells and nerves in general, holds also true of nerve-cells in their various combinations, complex groups and systems, such as constitute the highly complex organization of the central nervous system. Each psycho-physiological system has its usual threshold of stimulation just sufficient to set it into activity. If under the influence of external and internal conditions, the thresholds rise so that the ordinary stimuli of the environment cannot arouse the system into activity, then that system is practically isolated from the rest of the functioning mental aggregate, constituting the moving equilibrium of the living organism. *The system with the raised threshold is dissociated.*

An illustration may bring the matter home to the student. Let us imagine a telephone system of bells so arranged that the pressure on a knob or the taking of a receiver sends an electric current of a definite intensity through a series of systems of bells, causing them to ring. Suppose now that in one system the wires have become so changed in their diameter or constitution that a current of a different intensity is now requisite to set that system of bells into activity. The former current is no longer sufficient. The particular system can no longer ring by the action of the liberated current. That system is *dissociated.*

By changing the intensity of the current or by tapping the system from a different direction we may be able to set ringing the disabled dissociated system of bells. This would indicate that the system of bells itself is in good condition, and that only its interrelation with other systems of bells has changed. Something similar takes place in mental life. When the threshold of a particular system has risen, that system has become

dissociated, communication with the rest of the psycho-physiological or mental systems becomes difficult.

All the phenomena of dissociation are due to such a change or rise of thresholds. In that particular direction communication has become difficult. As some psychologists put it the paths have become blocked. This condition gives rise to functional anaesthesias, aboulias, amnesias, to all the manifestations characteristic of functional psychosis, or of functional nervous diseases.

There is another aspect to functional psychosis which appears to be paradoxical. While the usual threshold of personal consciousness is *raised,* the subconscious thresholds may, on examination, be found *lowered.* In fact, we may even lay it down as the law of functional psychosis that *all anaesthesias, aboulias, amnesias are also hyperaesthesias, hyperamnesias,—all losses are also gains.*

When the usual direct tracts are blocked, the indirect may do good service. To revert to the illustration of our disconnected or dissociated system of bells. When the wires ordinarily in use have become difficult to utilize, we may look for connections which have not been in use. It may be found that if such indirect, unused wires are properly tapped, the system may begin to ring louder, longer, and with a rather unwelcome noise and recurrence. The particular dissociated line once started cannot be arrested by other interfering lines, it is no longer inhibited by other associated lines, and hence, on a proper occasion, when called from a particular direction, the system of bells will respond with full vigor and without check.

This illustration brings out clearly the character of recurrent mental states. *Recurrence is the result of dis-*

sociation. The system keeps on ringing until the energy of the current is either exhausted or inhibited. *The blocking of paths, due to rise of thresholds, constitutes the mechanism of functional nervous diseases.*

The state of dissociation furnishes the general rule for diagnosis of functional nervous and mental diseases. *If a disabled system can function subconsciously, the malady is functional.* This can be found by different methods and by the induction of such states as hypnosis, the hypnoidal, and by the occurrence of the hypnoidic state.

CHAPTER XXIX

PSYCHOGNOSIS BY HYPNOSIS

THE following case of psychopathic, recurrent epileptoid attacks was studied by me in coöperation with Dr. Prince and Dr. Linenthal:

Mr. M., aged twenty-one years, was born in Russia, and came to this country four years ago. His family history, as far as can be ascertained, is good. There is no nervous trouble of any sort in the immediate or remote members of his family.

The patient himself has always enjoyed good health. He is an intelligent young man of good habits. He does not use alcohol or tobacco, and gives no venereal history.

He was referred to me for epileptiform attacks and anaesthesia of the right half of his body. The attack is preceded by an aura consisting of headache and a general feeling of malaise. The aura lasts a few days and terminates in the attack which always sets in about midnight, *when the patient is fully awake.* The attack consists of a series of spasms, rhythmic in character, and lasting about one or two minutes. After an interval of not more than thirty seconds the spasms set in again.

This condition continues uninterruptedly for a period of five or six days (a sort of *status epilepticus*), persisting during the time the patient is awake, and ceasing only during the short intervals or rather moments of sleep. Throughout the whole period of the attacks the patient is troubled with insomnia. He

sleeps restlessly for only ten or fifteen minutes at a time. On one occasion he was observed to be in a state of delirium as found in post-epileptic insanity and the so-called *"Dämmerzustände"* of epilepsy. This delirium was observed but once in the course of five years.

The regular attack is not accompanied by any delirious states or *"Dämmerzustände."* On the contrary, during the whole course of the attack the patient's *mind remains perfectly clear.* During the period of the attack the whole right side becomes anaesthetic to all forms of sensations, kinaesthesis included, so that he is not even aware of the spasms unless he actually observes the affected limbs.

The affected limbs, previously normal, also become paretic. After the attack has subsided, the paresis and anaesthesia persist (as sometimes happens in true idiopathic epilepsy) for a few days, after which the patient's condition remains normal until the next attack. After his last attack, however, the anaesthesia and paresis continued for about three weeks.

He has had every year one attack which, very curiously, sets in about the same time, namely, about the month of January or February. The attacks have of late increased in frequency, so that the patient has had four, at intervals of about three or four months. On two different occasions he was in the Boston City Hospital for the attacks.

Examination of the patient, made three weeks after the last attack, showed the following: Pupils were equal and reacted promptly to light and accommodation. Knee jerks were slightly exaggerated. No ankle clonus was present. No Babinsky was observed. There was a profound right hemianaesthesia includ-

ing the right half of the tongue, with a marked hypoaesthesia of the right side of the pharynx. All the senses of the right side were involved. The field of vision of the right eye was much limited. The ticking of a watch could not be heard more than three inches away from the right ear. Hearing in left ear was normal. Taste and smell were likewise involved on the right side. The muscular and kinaesthetic sensations on the right side were much impaired.

The patient's mental condition was good. He was well balanced, and did not give evidence of any emotional disturbances. He states that he has few dreams and these are insignificant, concerned as they are with the ordinary matters of his daily life. Occasionally he dreams that he is falling, but there is no definite content to the dream.

These findings were indicative of functional rather than organic disease. The *previous history* of the case was significant. The first attack came on after peculiar circumstances, when the patient was sixteen years of age and living in Russia. After returning from a ball one night, he was sent back to look for a ring which the lady, whom he escorted, had lost on the way. It was after midnight, and his way lay on a lonely road which led by a cemetery. When near the cemetery he was suddenly overcome by a great fright, thinking that somebody was running after him. He fell, *struck his right side,* and lost consciousness.

By the time he was brought home he had regained consciousness, but there existed a spasmodic shaking of the right side, involving the arm, leg, and head. The spasm persisted for one week. During this time he

could not voluntarily move his right arm or leg, and the right half of his body felt numb. There was also apparently a loss of muscular sense, for he stated that he was unaware of the shaking of his arm or leg, unless he looked and saw the movements. In other words, there was right hemiplegia, anaesthesia, and spasms.

For one week after the cessation of the spasms his right arm and leg remained weak, but he was soon able to resume his work, and he felt as well as ever. Since then every year, as already stated, about *the same month* the patient has an attack similar in every respect to the original attack, with the only exception that there is no loss of consciousness. Otherwise the subsequent *yearly attacks are photographic pictures, close repetitions, recurrences of the original attack.*

A series of experiments accordingly was undertaken. First, as to the *anaesthesia.* If the anaesthesia was functional, sensory impressions ought to be felt, even though the patient was unconscious of them, and we ought to be able to get sensory reactions.

The experiments which were made to determine the nature of the anaesthesia produced interesting results. These experiments show that the anaesthesia is not a true one, but that impressions from the anaesthetic parts which seem not to be felt are really perceived subconsciously.

The method made use of consisted in producing a visual hallucination whenever the anaesthetic hand was touched. That is to say, although the subject does not consciously perceive the tactile impressions, he claims to see the image of a number which corresponds with the number of times the hand is pricked or touched. This was found to be the re-

sult in this case. Whenever the hand was pricked a certain number of times successively, he claimed to see that number, a sort of pseudo-hallucination. The number was always correct, and showed that subconsciously the pricks must have been felt.

The details of the experiment were as follows: The anaesthetic hand was placed behind a screen and the patient was told to look in a glass of water and tell what he saw there. Impressions made on the anaesthetic hand gave rise to visual pseudo-hallucinations representing the sensory stimuli. Thus, for example, when his hand was touched, very lightly, five times, he saw the figure five very vividly and described it in detail. He saw the number written; it looked very large; and he saw it written on the back of a hand.

The vividness of the claimed pseudo-hallucination was well brought out when, projecting the hallucinatory hand on a screen instead of in the water, the patient outlined it with a pencil. When one of us placed his hand on the screen by the side of the hallucinatory hand, and the patient was asked to tell which hand looked more real, he insisted that both hands looked equally real, except that the hallucinatory hand looked farther away.

Different tests also showed that the *subconscious* reactions to impressions from the anaesthetic hand were more delicately plastic and responsive than the conscious reactions to impressions from the normal hand. We have the so-called "psychopathic paradox" that *functional anaesthesia is a hypaeresthesia.*

It is evident then that there could be no inhibition of the sensory centers, or suppression of their activity, or whatever else it may be called. In spite of the apparent profound anaesthesia, the pin pricks were felt

and perceived. The perception of them gave rise to perception, cognition, to a sort of pseudo-hallucinations that showed the pin pricks were counted and localized in the hand. The results of these tests demonstrate that in psychopathic patients all sensory impressions received from anaesthetic parts, while they do not reach the *personal* consciousness are perceived subconsciously.

Inasmuch as the sensations are perceived, the failure of the subject to be conscious of them must be due to a *failure in association.* The perception of the sensation is *dissociated* from the personal consciousness. More than this, these dissociated sensations are capable of a certain amount of independent functioning; hence the pseudo-hallucinations, and hence the failure of psychopathic patients to be incommoded by their anaesthesia. This condition of dissociation underlies psychopathic states.

For the purpose of studying the attacks themselves, the patient was hypnotized. He went into a deep somnambulic condition, in which, however, the *anaesthesia still persisted.* This showed that the dissociation of the sensory impressions was unchanged.

In hypnosis he related again the history of the onset of the trouble. His memory became broader, and he was able to give the additional information, which he could not do in his waking state, that at the time he was frightened he fell on his right side. Moreover, he recalled what he did not remember when awake, that throughout the period of his attacks when he fell asleep, he had vivid dreams of an intense hallucinatory character, all relating to the fright and fall.

In these dreams he lived over and over again the experience which was the beginning of his trouble. He

again finds himself in his little native town, on a lonely road; he thinks some one is running after him; he becomes frightened, calls for help, falls, and then wakes up with a start, and the whole dream is forgotten. After he wakes he knows nothing of all this; there is no more fear or any emotional disturbance; he is then simply distressed by the spasms.

While testing the anaesthesia during hypnosis, an attack developed; his right arm and leg began to shake, first mildly and then with increasing intensity and frequency. His head also spasmodically turned to the right side. The movements soon became rhythmic. Arm and leg were abducted and adducted in a slow rhythmic way at the rate of about thirty-six times per minute. With the same rate and rhythm, the head turned to the right side, with chin pointing upward. The right side of the face was distorted by spasm, as if in great pain. The left side of the face was unaffected. Pressure over his right side (where he struck when he fell) elicited evidences of great pain. Respiration became deep and labored, and was synchronous with each spasm. The whole symptom-complex simulated Jacksonian epilepsy.

It is noteworthy that the kneejerk on the right side was exaggerated by comparison with the left during the attack. Consciousness persisted unimpaired, but showed a curious and unexpected alteration. When asked what was the matter, he replied in his native dialect, "I do not understand what you say." It was found that he had lost all understanding of English, so that it was necessary to speak to him in his native dialect. His answers to our questions made it apparent that during the attack, as in his

dreams, he was living through the experience which had originally excited his trouble.

The attack was *hypnoidic* in character. He said that he was sixteen years old, that he was in Rovno (Russia), that he had just fallen, because he was frightened, that he was lying on the roadside near the cemetery, and that he wanted somebody to pick him up.

The hypnoidic state developed further, the patient living through, as in a dream, the whole experience that had taken place at that period. He was in a carriage, though he did not know who put him there. Then in a few moments he was again home, in his house, with his parents attending on him as in the onset of his first epileptiform seizures.

The attack terminated at this point, and thereupon he became perfectly passive, and when spoken to answered again in English. Now he was again twenty-one years old, was conscious of where he was, and was in absolute ignorance of what had just taken place.

It was found that an attack could regularly and artificially be induced, if the patient in hypnosis was taken back by suggestion to the period when the accident happened.

The experiment was now tried of taking him back to a period antedating the first attack. He was told that he was fifteen years old, that is, a year before the accident occurred. He could no longer speak or understand English, he was again in Rovno, engaged as a salesman in a little store, had never been in America, and did not know who we were. Testing sensation, it was found that it had spontaneously returned to the hand. *There was not a trace of the anaesthesia left.* The hand which did not feel deep pin pricks before now re-

acted to the slightest stimulation. *Spontaneous synthesis of the dissociated sensory impressions had occurred.* Just as formerly before the accident, sensation was in normal association with the rest of his mental processes, so now this association was re-established with the memories of that period to which the patient was artificially reduced.

The patient was now (while still believing himself to be fifteen years old) taken a year forward to the day on which the accident happened. He says he is going to the ball to-night. He is now at the ball; he returns home; he is sent back to look for a ring. Like a magic formula, it calls forth an attack in which again he lives through the accident,—*the fright, and the spasms.* With the onset of the spasm, dissociation again occurs, the *hand becomes anaesthetic,* and remains anaesthetic after the subject is awakened.

It was thus possible to reproduce an attack at any time with clock-like precision by taking him back to the period of the accident, and reproducing all its details in a hypnoidic state. Each time the fright and the physical manifestations of the attack (spasms, paresis, and anaesthesia) developed. These induced attacks were identical with the spontaneous attacks, one of which we had occasion to observe later.

This psychognosis enables us to understand to a large extent the psychogenesis of the attacks. At the time of the accident the intense emotional disturbance, the fright, acted as a dissociating agent, and dissociated the sensory and motor reactions of one half of the body involved in the accident so that they were no longer under the control of the personal consciousness. These dissociated elements were not, however, inhibited, or incap-

able of functioning, as was shown by the hypnoidic states and other phenomena brought out in the test experiments.

In cases of this kind, dissociated sensory and motor reactions become subconscious and capable of automatic activity. Sensory impressions are subconsciously perceived and motor reactions subconsciously excited. The dissociation (through the influence of the emotion) of these sensory and motor reactions and their automatic subconscious excitation *is* the attack. The original emotion of fear remains (unknown to the subject) dissociated in the subconsciousness as a fixed state. Here from time to time it acquires a separate and independent activity.

At periodic intervals, as under the stress of some emotion, or by association of ideas, the dormant activity is awakened and, though still unknown to the patient, gives rise to the same sensori-motor disturbances which characterized the original experience. These subconscious dissociated states are so much more intense in their manifestations by the very fact of their dissociation from the inhibitory influences of the normal mental life.

The psychognosis of such cases then, reveal on the one hand a dissociation of mental processes, and on the other hand an independent and automatic activity of the disaggregated psychic states. *Dissociation and automatism are the two fundamental conditions of psychopathic states.*

The following case of recurrent tremor is of interest. The psychognosis was made by me with the assistance of Dr. Linenthal.

M. R., fifty years of age; widower; salesman.

Patient complains of general nervousness. What

troubles him most is a tremor of his hands. The tremor becomes especially marked when he does something, such as writing, or carrying food to his mouth. The tremor gets much worse when he is excited or when he is fatigued, and *predominates in his right hand.* This disturbs him so much that he is ashamed to appear in company. He had the tremor for some years, but he noticed that it had become worse in the last few years.

About six months ago while he was sitting in company both legs began to shake. The shaking kept up for about ten minutes. He had had some wine then, but not enough to produce intoxication. This is the only time that his legs shook. He has not had it since then.

The patient's digestion is very poor, the slightest indiscretion in diet upsets him, and produces headache. He has attacks of headache only when there is digestive disturbances; the headaches are more frequently on the right side of the head. He does not get dizzy and has no specks before the eyes. For the last few weeks he has had ringing in the right ear. He attributes it to a cold.

When young he used alcohol considerably, though never to intoxication. Now he is quite moderate in the use of alcohol, drinks neither tea nor coffee, smokes a cigar every other day.

The patient has always been of a nervous temperament. About 23 years ago was sick for a few weeks with some stomach trouble. Seven years ago had rheumatism and was confined to bed for about six weeks. Ever since he has had a slight stiffness in his legs. Some years ago he used to get occasional attacks of epistaxis. Many members of his family are subject to nose bleeds.

Patient's father died at 76 of a "paralytic stroke."

Mother died at 50; cause is unknown to the patient. One brother died of diabetes. Two brothers are living and well. Patient had three children, two died in infancy. The remaining child, a daughter, is living and well.

Patient is a well built, healthy looking man; does not impress one as being of a neurotic temperament; tends to make light of his troubles, and is in no way hypochondriacal. Knee jerks were present, though difficult to get, on account of a slight rigidity in his legs. Pupils react promptly to accommodation and to light. The ocular muscles are all right. No sensory disturbances are present. Touch discrimination is good, though it is slightly more acute on the left side than on the right. Discrimination of the temperature sense is good. Field of vision is normal.

A fine tremor was observed in both hands, more marked in the right hand. The tremor was increased when patient was told to do something. When he took a pencil to write his name the tremor was exaggerated, the writing was irregular and jerky. Tremor also became more pronounced when the patient carried a glass of water to his mouth.

When he was asked, if he had any dreams, he said that he used to have bad dreams formerly, though he could not tell what they were about. It was insisted that he try to remind himself of the nature of his dreams, but it was of no avail. His dreams now are not bad; they are on the contrary of a pleasant nature. He dreams of winning lots of money in the lottery, of meeting some of his friends, and has other dreams of an indifferent nature. During the conversation with the patient the question of dreams was referred to over and

over again, but nothing could be obtained.

M. R. ascribes his trouble to a great deal of worry. He had been a well to do man, he was the owner of a large mercantile establishment. But due to some business reverses he lost all he had. Besides, his wife had been an invalid for twenty years, and her illness consumed a large part of his possessions. Now he has to work for some one else and he is worrying all the time. He is also grieved by the change of the attitude of people towards him. People for whom he had done a good deal formerly now refuse to recognize him. All this worries him, and he thinks that this constant worry is the cause of his trouble.

The history was once more gone over and was found to be consistent with the previous account. About nine years ago M. R. had to give up his business and was under considerable worry and excitement. His wife died nine years ago and had been an invalid for twenty years. When M. R. held out both hands there was a marked tremor, more marked in the right hand. After a while the tremor disappeared from the left hand and was much diminished in the right hand.

M. R. was put in the hypnotic condition. While being hypnotized he was a little excited, he wanted to know what would be done to him. He was assured that every thing was all right and that he need not worry. His eyes gradually began to close. He resisted for a time, but finally he was no longer able to open them. He was in a state of complete relaxation. He could not open his eyes when challenged to do so. There was a marked degree of catalepsy. The tremor had completely disappeared while in the hypnotic condition. He held up his hands with the fingers spread out, there was

no perceptible tremor.

M. R. was now asked to give an account of the conditions under which he first observed the tremor. He did not answer at first. The question had to be repeated. When the patient did answer, he spoke in a very low voice, somewhat hesitatingly. He said that *he first noticed the tremor when he was told that his wife died.* He was away from home when she died and when he returned he was told that she had just breathed her last.

He was asked if he had any dreams. "I dream frequently about my wife" was the reply.

"Tell us some of the dreams."

"Last February I dreamt that my wife was brought to life by a physician. I was in the next room and the nurse came in to tell me that she was dead. I was much excited and trembled all over."

"Have you had any other dreams?"

"Yes." "What were they?"

"I dreamt that my wife who had been wretched for many years asked me to take her to Europe so that she might get well. I promised to take her the following spring. She died before spring came. I thought that had I taken her over she might have recovered." (Patient could not give the time when he had the dream.)

"Can you remember any other dream you had?"

"I dreamt that my wife came to me and told me that she felt sorry that I was left all alone, that she could not come to me."

In answer to a question as to what she looked like, M. R. said she was dressed in white. While relating this dream patient became excited; his face expressed the most extreme suffering, he began to sob and tears

ran down his face.

"A few weeks ago I dreamt that my wife came to me dressed in white, and told me that she was very sorry that our daughter was ill."

Patient was asked to give the earliest dream he could remember that he had after the death of his wife.

"Six years ago (his wife died nine years ago.) I dreamt that I took my wife to Europe and she had completely recovered. I was very happy to see her."

In answer to a question patient said that his wife looked very well and that she wore a new black dress.

When asked if he had any dreams about his wife before six years ago, he answered in the negative. It was then insisted that he should recall some dream he had before that time. M. R. said he could not remember. Some of the dreams he remembered when he woke up, but he had forgotten them since, but now they came back to him.

"Four years ago I dreamt that I came back with my wife from Europe, but in some way or other I lost her. I became very much excited I fell out of bed, cried out, and woke up. I was shivering all over. I went back to sleep and then dreamt that I looked for her everywhere, but could not find her. I cried much."

While relating this dream M. R. became excited. He sobbed and tears rolled from under his eyelids. *It seemed as if he was living that experience over again.*

The dreams came up in rapid succession, all that was necessary was to say "What other dream did you have?" when the patient in a low trembling voice, full of anguish, began to relate his sad dream experiences.

"I dreamt that my father and mother were standing by my bedside and crying over me. I complained to

them about my condition. I told them how lonely I was in this world, that my wife was dead, and that I had nothing to live for.

"I dreamt that I was told that my father and mother were also dead. I cried bitterly as I had no one in the world.

"Last Christmas I dreamt that I saw my dead father standing by my bed side. He told me that he was going to pray for me. I was very much excited and shook all over." (Patient moved restlessly and looked as if in agony.)

"Can you tell any other dreams?"

"I had many dreams in which I saw my wife standing over me and crying. She told me that I was always so kind to her, and she was very sorry that I was so lonely and wretched now.

"Last night I dreamt that I fell and sprained my ankle. My legs pained me much and they were rather stiff."

The tremor in his hands disappeared. When patient's hand was held up it was steady. No tremor could be perceived.

When asked, if he remembered any more dreams, he said: "I dreamt that my mother came to me and cried. She told me that she would see that I had a better life henceforth. I cried and trembled all over." In answer to a question he said that when he awoke he did not remember that he had the dream.

The account of the various dreams seemed to have exhausted the patient, and it was not considered wise to question him any further. Suggestion of well-being was given. Patient was awakened. There was complete amnesia of what took place during hypnosis.

When he came again M. R. said that he slept soundly. He was immediately questioned about his dreams, he said that it occurred to him, that he occasionally dreamt about his wife. He said that he could not think of it before when we took his history, he could not however give the contents of any dream that he had about his wife.

M. R. says he feels much better and that the tremor has diminished considerably, but that he is worrying a good deal. Dreamt the last few nights about business matters. This morning he dreamt that he had lost his position.

The following additional facts in the patient's history were obtained. M. R. came to this country thirty-one years ago. Shortly after he came over he was attacked by thieves one night while carrying a bundle of merchandise, and the bundle was taken away from him. About two years later while on a country road, he was accosted by two men who demanded money from him. Both these incidents upset him much.

When a boy of ten he was in the habit of visiting a neighboring shoemaker's shop. He used to annoy the shoemaker, and the latter threatened to cut off his arm. Once the shoemaker caught him and while holding a knife in his hand he unintentionally made a *deep cut on the patient's right arm* in which the tremor specially predominates. The patient was greatly frightened over it. He showed us the scar on his right arm.

M. R. told us that his life had been a very hard one. He met with many business reverses which constituted the chief cause of his worry. Besides he worried a good deal when his wife was ill. Her illness cost him a

good deal of money. He used to spend many sleepless nights which completely exhausted him at times. He was married for twenty-seven years.

He was then given to copy some lines from a newspaper. The writing was irregular and jerky.

M. R. was put in hypnotic condition. Could not open his eyes, when challenged. Catalepsy was easily induced.

"When did you first notice the tremor?"

"I first noticed it a couple of months before my wife died. I was writing a letter and my daughter noticed that my hand was shaking."

"What caused the tremor?"

"I had lots of trouble at that time. I had a good deal of business troubles, my wife's illness, and I had at that time a very severe nose bleed which weakened me."

On further questioning he told us that the next time he noticed the tremor was when he was told that his wife died. He said he was very much excited then. He felt that he had lost his only friend in the world.

When asked, if anything happened during his wife's illness that especially excited him. He said that he was present at several operations that were performed on his wife. He saw her cut open, and he was affected with intense anxiety and fear.

"When did you have the first dream about your wife?" "About three or four years ago." "Any dreams before this?" "Yes, about one year after the death of my wife I had the first dream." "Any dreams about her before that time?" "I can not remember any." "What was the first dream you had?" "My wife dressed in white came to me. She was crying over

me, she felt sorry that I was left all alone in the world."

At another time he dreamt that she came to him. She looked worried. Both cried very much. He fell out of bed. The fall woke him up. He looked around for his wife, but he could not find her; she was gone.

M. R. was asked to relate some more of his dreams. He became restless, and drew up his legs, as if he had a cramp. When asked what the matter was, he said that he had a severe pain in both legs. When asked the cause of the pain, he said he did not know; he has the pains very often when he sleeps; he thinks it is due to his falling out of bed, that he never has the pains during day time. It was suggested that the pain will go away, and that he will feel comfortable. Patient was relieved and said that the pain was gone.

M. R. was now asked to give some more of his dreams. He gave a number of dreams all of the same content, that his wife was coming to him dressed in white and cried over him, and kept telling him that she felt sorry for him.

The patient apparently did not remember many of the dreams that he told us the last time. We tried to help his memory by telling him part of the content of some of his dreams, but even then they were imperfectly remembered.

In contrast to the last time he did not show any agitation while relating his dreams. He was calm and did not display the emotional excitement when he was first put into the hypnotic state.

M. R. also told of a number of dreams which he had about business matters. He dreams of making money and then again of losing it. He also dreams about a brother who is dead now. This brother had been sick

for a long time and the patient took care of him during his illness. Patient frequently dreams of the brother coming to him saying: "You are the best friend I had in the world." Occasionally he dreams about his father and mother.

We now tried to see whether M. R. could in this state give the reasons for some of his motor manifestation.

"You said that about six months ago while you were in the company of friends talking about business your legs began to shake. What was it that passed through your mind at that time?"

"I thought about my wife at that time."

"What caused you to think of your wife then?"

"Somebody asked me how long she had been dead."

When asked if he attributed the shaking to the thought about his wife, he said that he did not know, but he added that it was very likely that this thought caused the shaking.

When asked why his right hand shook more than his left, he said that he did not know, but he thought it might be due to the fact that he worked harder with his right hand than he did with his left, and also that when "I fall out of bed I often fall on my right side." The right side has been the nucleus of his psychopathic state since the trauma with the shoemaker. He could not remember having had any distressing dreams before his wife died except once when he dreamt about his mother.

M. R. was told to open his eyes and sit up, but still to remain in the hypnotic condition. He was given a paper to write his name on, and a few lines were dictated to him. The writing was more steady and regular than in his waking state. Towards the end the tremor

became more manifest. The patient seemed to have fully emerged from his hypnotic condition.

There was complete amnesia as to what took place in the hypnotic state.

Thus we find that a study, or psychognosis of psychopathic cases clearly reveals the presence of a set of subconscious systems which forms the cause or substratum of the symptoms of the psychopathic states. The main characteristic of this set of systems is its persistence in the subconscious and its continuous *recurrence* in the upper consciousness. The sensory, the emotional, and the conceptual aspect of the set of systems remains in the subconscious, but the reactions, characteristic of the set of subconscious systems, come to the full light of consciousness, and become manifested as the symptoms of the malady. The psychognosis reveals this subconscious side of the symptom complex, hidden from the direct consciousness of the patient. The motor manifestations are usually the ones that form the predominant symptoms of a dissociated complex, or what I prefer to term the "dissociated set of systems." The subconscious processes are the sensory, emotional, and ideational elements of the dissociated set of systems, while the motor elements associated with them are the ones that come to the surface.

Of course, this law is not rigid as quite often sensory elements belonging to the system come forward in the form of sensory and emotional disturbances, and give rise to what we term psychopathic sensory symptoms, the motor elements, however, usually predominate.

Dissociated sets of systems have to use the same

motor apparatus, the same motor arrangements and reactions as the ones used by the normal personality. The patient does not understand the reason of the motor manifestations, since the whole set of systems is buried deep in his subconscious, but he can from time to time witness the motor convulsions when the systems heave up from the depth of the subconscious regions. Thus the psychognosis in the one case showed us the systems or set of dissociated systems which have given rise to motor symptoms of a psychopathic Jacksonian epilepsy with hemianaesthesia, while in the other case a similar psychognostic investigation by means of hypnosis has revealed to us the set of subconscious systems which have given rise to the motor symptoms of an uncontrollable tremor.

CHAPTER XXX

PSYCHOGNOSIS BY HYPNOIDAL STATES

AS an illustration of the nature of recurrent, active, subconscious sets of systems, giving rise to psychopathic affections I may take the following psychognostic study, carried out by means of the hypnoidal state.

Mr. C., a young man of twenty-five, a college student of good standing, is very able, conscientious in his work, and is scrupulously moral in his daily life.

Except for an aunt who has apparently died of tuberculosis, family history is negative. Parents are living and healthy, sisters and brothers are all well. Both maternal and paternal branches of the family are of good healthy stock, with no neuropathic or psychopathic taint. The family is well to do, and the members are intelligent, educated, and able, so that the patient's childhood and early youth have passed amidst relatively healthy surroundings.

As a child the patient passed through children's diseases, but did not suffer from any nervous troubles As a boy he has been of robust health, taking great delight in physical exercises and pranks characteristic of boyhood. Although he is now of a rather serious, scientific turn of mind, devoting most of his time to mathematics, mechanics, and to the various branches of physical science, he has been in his childhood and boyhood impressionable and imaginative. He was a great lover of fairy tales, an omnivorous reader of all sorts of ex-

travagant stories and of voluminous novels.

Dreaming was his delight. Many a time he went off into a dark nook and kept on dreaming about princes and princesses; sailing in airships, ascending inaccessible mountains, scaling high peaks and then descending into mysterious caves and chasms. He lived in his imagination the world over, and in all ages. Time and place were no barrier to him. He lived "the universe over and through eternity." He lived with fairies, spirits, and genii, who built for him enchanted palaces. He was "at the creation of the universe and saw the formation of the world." Stories were to him histories, real histories in which he was the central figure, the real hero. When very young, he had auditory hallucinations,—"angels called him by name and he listened in dreams to the music of the spheres." He ceased to have those hallucinations about the age of ten.

On examination, patient is found well nourished. Reflexes are not exaggerated; field of vision is normal; no sensory disturbances, no motor troubles are present. Memory for disconnected impressions is good, while his recollection of past events and memory for present events are excellent. There are no disturbances of recognition. Sense of localization is good, so also is his sense of orientation. He is rather a good visualizer. A few times in his later years he experienced illusions of reversion of locality, and also hallucinations of recognition, of having seen the same place before. Voluntary attention is in excellent condition. His conception of abstract ideas, his logical acuteness for points and distinctions, for comprehension of complicated trains of reasoning and for disputation by logical processes are truly remarkable. His sleep is very good and he has no bad dreams,

though he is quite an active dreamer. The color field, on closure of eyes, is "brilliant," and his hypnagogic and hypnapagogic* hallucinations are often rich and brilliant in color.

Of late, the patient has been hard at work, studying for his examinations; he has been worrying over some family troubles as well as over his future career. He is somewhat nervous and restless, and occasionally a fit of irritability seems to take possession of him, an irritability which he sometimes has great difficulty to control. The patient complains of irritation of the bladder,—he cannot retain his urine for more than five minutes at a time and sometimes less than that. When he makes an effort to control his urgent desire to urinate, he begins to feel hot, his eyes begin to hurt and feel queer and bulging, and he has a distressing feeling of tension in his forehead, almost amounting to a headache.

During that time he feels confused, his attention is wandering, his apprehension of complicated trains of thoughts becomes defective, his desultory memory becomes extremely poor, he cannot repeat any series of disconnected syllables, while his logical memory for phrases and connected events becomes vague. All these distressing symptoms are instantly relieved as soon as the pressing need for urination is satisfied.

This insistent, troublesome desire of urination disturbs the patient's studies, interferes with his regular work, makes him undergo tortures in the lecture-room, or in church during services, or when visiting some

*This term has been used by me for dream hallucinations of the intermediary state in passing from sleep to waking, in contradistinction to hypnagogic hallucinations of the state of falling asleep.

friend. When, however, he gets interested and absorbed in his work, or in some conversation, the insistent, distressing desire disappears for hours together. As soon as the interest lapses the desire reappears.

In addition to this insistent desire there is also present the insistent idea that along with the continuous outpour of the urine there is also an oozing out of his "vitality." This fear of loss of vitality gives rise to an almost continuous examination of the urine to discover any abnormal changes. The color, the dribbling, the feel of the urine,—all are noticed and watched with a feeling of anxiety. The patient is conscious of the absurdity of the insistent idea, but he cannot help it. The idea gets the better of his reason.

Occasionally, when he gets specially fatigued, an idea of which he feels extreme disgust enters his mind. When entering into close conversation with a male person, the idea of homosexual relations gets possession of his mind. He does not have the least desire, in fact, he feels disgust at the very thought of it. He cannot account to himself for the reason of it, whether or no it is the horror of the idea which suggests it by association of contrast; he cannot understand it; the idea to his extreme disgust flashes on his mind; there is absolutely no desire accompanied with it, but deep disgust. The idea comes suddenly and as suddenly disappears. When the idea is gone, he afterwards wonders how it could have possibly entered his mind at all. It appears to him so "idiotically stupid." "Why should such a disgusting, stupid thought come to one's mind?"

The patient is also troubled by a form of *folie du doute*. He is not sure that the addresses on his letters are correctly written; and no matter how many times

he may read them over, he cannot feel assured that the addresses are correct. Some one else must read them and assure him that the addresses are right. In the absence of others he has devised the plan of copying the address from the envelope. This is somewhat more satisfactory, but then sometimes he is seized with the idea that may be the copying is wrong. Now and then he can help himself out by reading the address aloud. The seeing, reading aloud, the hearing of the words read, and the feeling of pronouncing the words, along with the movements of copying—all those sensory stimuli seem to help to intensify the sense of reality and increase the feeling of assurance in the "real correctness" of the address.

When he has to write many letters sometimes a sudden fear gets possession of him that he had interchanged the letters and had put them into the wrong envelopes. He has then to tear open the envelopes and look the letters over and over again to assure himself that the letters have been put by him into the right envelopes. He becomes satisfied when assured by some one else. Before he drops the letters into the letter box he must repeatedly read over the addresses to be fully sure that he has the addresses all right. This condition is not a permanent one, as this whole trouble disappears for weeks, and reappears when he is greatly worried or fatigued.

Similarly, in turning out the gas jet he must needs try it over and over again, and is often forced to get up from bed to try again whether the gas is "really" shut off. He lights the gas, then puts it out, then tries to test the gas jet with a lighted match to see whether the gas leaks and is "really" completely shut off.

Similarly, in closing the door of his room, he must try the lock over and over again; he locks the door and then unlocks it again, then locks it once more, still he is not sure; he then must shake it violently so as to get the full assurance that the door has been actually and "really" locked.

One is almost tempted to generalize that the sense of reality is weakened in the patient. But is it not strange that this weakness of the sense of reality should only be in relation to particular ideas and acts, while it is in excellent condition as far as all other ideas and acts are concerned? *It is not the sense of reality that is at fault, —it is the special insistent idea.*

At one time he suffered from palpitation of the heart, he thought he had some heart trouble, for which he visited many physicians who kept on palpating, auscultating and percussing his heart, giving him all kinds of directions and precautions, putting him on a strict diet, regulating his exercises, prescribing bromides, digitalis and strychnine. But the more physicians regulated and prescribed, the more the refractory heart kept on thumping. Finally, losing patience, he gave up treatment and felt much better.

Another trouble which has possession of him, though it is not insistent, is the fear of getting consumption, or of being infected. Sometimes the fear becomes quite troublesome, it becomes a regular mysophobia, a *délire du toucher;* he may then keep on washing himself incessantly, rubbing his skin until it gets sore. Although the patient feels quite troubled, when the fear is on him, still it is not persistent; it seems to come in flashes, and he is quite free from it for long intervals of time. Still he has the feeling that the fear is there and

it requires only special conditions to have it awakened. The mere sight of a supposed case of an infectious disease, or the contact with a tubercular patient, is sufficient to revive the state of mysophobia.

There are again times when he feels as if his will is paralyzed. This condition comes on him at great intervals, when he happens to be very tired, and he is in a state of abstraction and reverie. He feels as if he has no power of movement, he has hardly the strength to ask for a glass of water. When the water is brought to him he cannot reach out for it. He cannot account for this peculiar feeling that sweeps over him so suddenly. He knows well he is not paralyzed, and still he cannot move. It is an attack of abulia, it is his will that is paralyzed. After making one effort the spell is broken.

Occasionally an insistent idea gets a hold of the patient, an idea which is distressing to him and which makes him miserable. He thinks of tearing out his eyes and put them under some weight and have them crushed. If the patient sits in a chair, he thinks of putting the eyes under the chair and have them crushed. If he goes in a car, he thinks of having his eyes crushed under the wheels of the car. He tells me that the insistent idea is sometimes so vivid and real that he can almost feel the cars passing over the eyes, and that he can almost hear the eyeballs crush and crack. The patient fully realizes the absurdity of the idea, but it keeps on coming against his will. The idea comes in flashes, leaves for some time, and then comes again when he expects it least.

By means of the method of hypnoidization, or by induction of hypnoidal states the following data were obtained:

When a young child the patient lived with an old grandfather of his who suffered from bladder irritation with incontinence of urine, obliging the old man to go to the toilet room almost every five minutes. He was much attached to the poor old grandfather, whose sufferings evidently made a deep impression on the child.

The grandfather was also absent-minded and he had to try to close the door or turn the key in the closet many times before he could fully be assured that the closet door was locked. The grandfather had also difficulty and hesitancy to handle the various things given him. When he asked for water, the glass given him was sometimes left on the tray for several minutes before he was reminded to take it. All this the child watched with great sympathy and distress. Being a highly impressionable, sensitive, and imaginative child, can we wonder that his mind has been deeply impressed with what had taken place before him every moment of his young life?

It was also in relation to his grandfather that he overheard people say that "the vitality is oozing away." In his childish mind he connected the oozing of vitality with the act of urination. This was still further emphasized by his reading of quack literature about "the fearful results of oozing vitality" during puberty and manhood. All this was manifested in a state of anxiety and trepidation for the "oozing vitality," and, though those sad experiences have all gone from the patient's conscious memory, they have not, on that account, ceased their life existence,—they have simply lapsed from his personal consciousness, but only to become submerged into his subconscious life; and from the depth of his subconsciousness these dissociated, disaggregated ex-

periences of child-life kept on recurring as insistent psychomotor states with all the intensity of anguish of the original experiences.

Instead, however, of the symptoms being associated with his grandfather, they have, by a very natural process of confluence and fore-shortening, become grouped around the emotions which the patient has actually gone through at that time of his life, and have hence become associated with himself. The patient was living over again in his own subconscious life the life experiences of his deceased grandfather, experiencing all those various distressing symptoms for which the patient could consciously give no account. May we not in a certain sense say that the grandfather's sufferings have been transmitted to the grandson? May we not say, be it in a figurative sense, that the grandfather's life has become resurrected in the subconscious self of the grandson?

The abulia manifested by the patient no doubt took its origin in what may be termed the subconscious "grandfather cycle" of experiences. Other experiences belonging to different cycles have also co-operated subconsciously and have helped to give rise to the state of will-defect. In one of the hypnoidal states it has come to light that, when the patient was quite young, probably not more than six, he was taken to the bedside of a child of twelve who was stricken down with some form of paralysis. Once the experience struggled up in the hypnoidal state it stood out clear and distinct. The patient could in his mind's eye see the courtyard, the house, the people and the paralytic child lying helpless in his little bed, a kind of a crib. Even now when the subconscious experiences have become identified not as his

own, he still feels a sinking sensation "in the pit of the stomach," and feels the helplessness of the paralytic child. We can hardly realize what a deep and lasting impression such an experience may have on the tender mind of an extremely sensitive and highly imaginative child.

The great sensitivity and impressionability of the child can be gathered from another fact that also became revealed in one of the hypnoidal states. At about the same age of six or seven, the period to which the cycles of dissociated experiences belong, and which have later on given rise to most of the distressing symptoms from which the patient has been suffering, when the child was in school, a man with a paralyzed right hand happened to come into the schoolroom. The child represented to himself vividly this same condition of paralysis in his own hand; he felt his hand and fingers growing powerless and his arm hanging limp by his side. Finally the feeling of helplessness and mental anguish became so intense, the paralysis so real that, overcome by his emotion, he fainted away. He felt sick for a few days. There is little doubt that such experiences have largely contributed to the patient's abulic state in which his will to move his limbs and especially his hand is paralyzed.

Now as to the homosexual ideas, what was the cause of ideas of sexual inversion, unaccompanied by any desire, foreign to the patient's nature and associated with a feeling of almost "nauseating disgust"?

In one of the hypnoidal states subconscious experiences emerged which, after a little tapping and close following of the course of the warped train of subconscious associations, finally assumed the shape of the following

connected account: When about the age of eight and a half he entered a private school in which there were also boys of the age of sixteen. Two of those boys gained his friendship and one day took him out for a walk into the woods. There they told him of a secret club they had formed and asked him to join it. The little boy was much pleased by an invitation to join a club of big boys. They then took him farther away into the woods into some lonely corner where they proceeded to enter into homosexual relations and urged him to imitate them, ending their urgings by forcible seizure. The little fellow got frightened and ran; the big boys gave chase, but they soon gave it up, as he hid himself in some thick bushes. He told his parents about it and was taken out of the school. This experience lapsed from his conscious memory, but remained firmly imprinted on his subconscious memory, giving rise to the apparently unaccountable homosexual ideas at which he felt so much disgust. The homosexual ideas were really foreign to his character and no wonder his whole nature felt revolting disgust toward them.

There are other ideas, some of an insistent, some of a pleasing character, some of an apparently persisting aesthetic type, ideas and ideals, unaccountable on any other view, but on the theory of dissociated states and disaggregated subconsciousness. We cannot possibly describe here all of them, but we can bring a couple, typical of the rest. Why should the patient be pleased and even become sexually excited at the sight of a green petticoat? Why should the smell of heated iron, the sight and feel of starched clothes be so agreeable and even sexually exciting? Why should a prominent abdomen, large hips, long, pendulous breasts, a few small black

patches, interspersed with some little red pimples on the face have a sexual attraction and possess the significance of sexual stimulations? Why, again, should his idea of feminine beauty be jet black, curly hair; large, black, lustrous eyes; a pale, somewhat dark, skin; a pouting mouth; a low forehead and a slightly protruding chin? The method of hypnoidization, or the induction of hypnoidal states gives an insight into these apparently unaccountable and whimsical mental states revealing their origin in subconscious sets of mental systems of his early boyhood and childhood.

Now in the hypnoidal states the image of a female figure emerged, a figure which the patient recognized as a nurse of his whom he had up to his fifth year. She was a young woman of not more than thirty, of tall stature, with big hips and pendulous breasts, her face bearing the markings of small black plaster patches and red pimples. He sees her ironing some white goods while he tucks and pulls at her dress, at her green petticoat. She used to fondle him, kiss him, embrace him and press him to her breasts with which she often let him play.

All those subconscious experiences of the patient's childhood have helped to endow definite sensations and peculiar physical characteristics with an otherwise unaccountable attraction and sexual significance.

Likes and dislikes, if they belong to the fundamental instincts, can be traced, if one is sufficiently persistent with the hypnoidal state and the method of hypnoidization, to definite, dissociated, subconscious system, *meaningless* in the patient's present life adaptations.

Similarly, in the case of the patient's peculiar ideal of feminine beauty, the hypnoidal states brought

out the underlying subconscious systems. When the patient was of the age of seven he lived in the same house with his maternal aunt who had a little girl who was his companion in his plays and games, whom he worshiped and adored. It was that little cousin of his that possessed all those physical characteristics,—black, curly hair; large, black, lustrous eyes; a low forehead; a pouting mouth; a pale, dark skin; a slightly protruding chin,—characteristics which have formed the foundation of his psychopathic ideal of feminine beauty. These subconscious states gathered all the more latent force from the circumstance that the little girl fell a victim to an infectious disease, scarlet fever, and the little fellow stood at the deathbed of his little cousin.

All those experiences may be regarded as belonging to the patient's "sexual cycle" of subconscious life activity.

We may turn now to other subconscious systems which may be designated as the "infectious cycle." What is the origin of the patient's mysophobia? Why and whence his fear of death and palpitation of the heart? As a very young child and at a very tender age he had a rather rich experience in witnessing death agonies. He was present at the deathbed of his great-grandmother just at the moment when she gave up the ghost in the arms of his grandfather; he also watched the death agonies of his aunt who died of tuberculosis. When at the age of seven and a half an epidemic of scarlet fever broke out in the house; his sister, his younger brother and his cousin, fell victims to the contagious disease, and he was present at their death-bed.

During the hypnoidal states an image of a figure

suddenly appeared before the patient's mind, held the hand over the heart, then fell, blood gushing from its mouth. The patient could not identify the figure, but he felt it was some real experience. It is quite probable that this related to some actual event of his early childhood. The fear of infection and of death, as well as the palpitation of the heart consequent on such fears, were, by means of the induced hypnoidal states, traced, as have been the rest of the recurrent psychomotor states, to dissociated subconscious experiences.

But why those insistent ideas about the eyes? For some time this could not be answered. One time, however, the patient happened to go into a deep hypnoidal condition, he fell into one of those intermediary states closely bordering on hypnosis. In this intermediary, subconscious state new episodes from the patient's child-life emerged. We may characterize this cycle of subconscious experiences as "the great-grandmother episode." An ancient great-grandmother of his lingered in the same house with the patient. While in his deep hypnoidal state the patient could clearly see the tall figure of his great-grandmother. She was greatly emaciated, skin and bone, and he stood in awe of her.

Now this great-grandmother of his suffered from inflammation of the eyes. In the hypnoidal state the patient could recollect the many different liquids she used as washes for the eyes. She lived in a dark room and complained she could not see, the eyes pained her so much.

And now a new experience emerged. Once the patient happened to get an inflammation of the eyes. How he dreaded those great-grandmother's bottles! He had to undergo the ordeal of having his eyes bathed by his

great-grandmother's various washes. He also remembers some horrible stories told of people who have pains in the eyes, how the eyes "swell and bulge and then crack and burst." He also recollects stories of people with "glassy eyes," who can take the eyes out and have them "crushed and cracked by passing objects." We can well imagine what a deep and lasting, though subconscious, influence such gruesome tales may exert on the sensitive mind of a highly imaginative child.

Thus by means of the method of hypnoidization, or by the induction of hypnoidal or intermediary states, the various threads of the complex web of insistent or recurrent psychomotor states with their concomitant symptoms have been traced to dissociated, subconscious systems, having their origin far back in the dim regions of the patient's child life.

The dissociated subconscious experiences, like the moment consciousness of low types, kept on recurring with the same or similar mental content and psychomotor reactions, giving rise to apparently unaccountable, irrational, insistent ideas and emotions, deeply affecting the patient's self-consciousness.

All those experiences have *no meaning* in the patient's present life activities. They are pathological, just because they are *meaningless,* not adaptable to the present environment. Biologically they have as much meaning in the economy of the individual as the appendix and a host of other rudimentary organs, functions and processes. *Psychopathic states are cases of atavism within the life history of the individual.*

The following case may serve as a good example of hypnoidal psychognosis, revealing sets of subconscious systems as the basis of psychopathic symptoms.

M. L. nineteen years of age. Family history is negative, his parents died when the patient was young, and he was left without kith and kin, so that no data could possibly be obtained.

Physical examination is negative. Field of vision is normal. There are no sensory disturbances. The process of perception is normal, and so also is recognition. Memory for past and present events is good. His power of reasoning is quite limited, and the whole of his mental life is undeveloped, embryonic. His sleep is sound; he dreams little, wets his bed since childhood. Digestion is excellent; he can digest anything in the way of eatables. He is of an easy-going, gay disposition, a New York "street Arab."

The patient complains of "shaking spells." The attack sets on with tremor of all the extremities, and then spreads to the whole body. The tremor becomes general, and the patient is seized by a convulsion of shivering, tremblings, and chattering of teeth. Sometimes he falls down, shivering, trembling and shaking all over. The seizure seems to be epileptiform, only it lasts sometimes for more than three hours. The attack may come any time during the day, but it is more frequent at night.

During the attack the patient does not lose consciousness, he knows everything that is taking place around him, he can feel everything pretty well; his teeth violently chatter, he trembles and shivers all over, and is helpless to do anything. There is also a feeling of chilliness, as if he is possessed by an attack of "ague." The seizure does not start with any numbness of the extremities, nor is there any anaesthesia or paraesthesia during the whole course of the attack. With the exception of the

shivers and chills the patient claims he feels "all right."

Patient was put into a deep hypnoidal condition. There was some catalepsy of a transient character, but no suggestibility of the hypnotic type. In this hypnoidal state it came to light that the patient "many years ago" was forced to sleep in a dark, damp cellar where it was bitter cold. The few nights passed in that cold cellar he had to leave his bed, and shaking, trembling, shivering and chattering with cold he had to go to urinate, fearing to wet his bed, in expectation of a severe punishment.

The patient, while in that intermediary, subwaking, hypnoidal state, was told to think of that dark, damp, cold cellar. Suddenly the attack set on,—the patient began to shake, shiver and tremble all over, his teeth chattering, as if he was suffering from great cold. The attack was thus reproduced in the hypnoidal state. "This is the way I have them," he said.

During this attack no numbness, no sensory disturbances, were present. The patient was quieted, and after a little while the attack of shivering and cold disappeared. The room in which the patient was put into the hypnoidal state was dark, and accidentally the remark was made that the room was too dark to see anything; immediately the attack reappeared in all its violence.

It was found later that it was sufficient to mention the words "dark, damp, cold" to bring on an attack even in the fully waking state. We could thus reproduce the attacks at will,—those magic words had the power to release the pent-up subconscious forces, and throw the patient into convulsions of shakings and shiverings, with feeling of cold and chattering of the teeth.

Thus the apparent epileptiform seizures, the insistent psychomotor states of seemingly unaccountable origin, were traced *to dissociated, subconscious systems, now lapsed and meaningless in the patient's present environment and life reactions. They are recurrent reversions, atavistic manifestations of lapsed, now meaningless groups of psychomotor reactions.*

Mrs. L., sixty years of age; married. Family history is good. Parents died of old age; brother died of apoplexy. Patient had one daughter who died some fifteen years ago.

The patient complains of sensitiveness of the stomach, of kidney trouble, and of nervousness. During the attacks of nervousness she is restless, sleepless, and is undergoing "death agonies." The suffering is so intense that, in spite of her religious scruples, the thought of suicide forces itself on her mind. She has an insistent fear of getting insane; the fear is so intense that she paces the floor night after night, like an animal in a cage.

She is unable to eat and hardly drinks anything when the attack is on. If she attempts to eat, she rejects it immediately. "While my brain is perfectly clear to take up any intellectual pursuit, if I attempt, for instance, to purchase anything in the way of apparel, my brain gets on fire and I walk the floor in a frenzy of excitement, not having the least idea as to the choice I should make. I am not able to sleep or eat, and what little food I eat does not digest. Although so disabled in judgment as to myself, my friends often come to me to aid them in their decisions in matters of apparel, because they value my judgment, which is perfectly cool, when I am deciding for them."

Though the oculists do not find anything special the

matter with her eyes, she complains of weakness and occasionally of complete darkness settling on the eyes, at first in the form of a mist, and then, becoming denser, ends in total darkness, a form of functional amblyopia. She also complains of severe headaches,—the head feels at first dizzy, sore, painful, throbbing, and hot, as if it were on fire. Patient also complains of trophic disturbances, of a dry skin, of swellings and rashes on the body. For years she has been suffering from those trophic disturbances which she terms "erysipelas."

When the attack sets on, the patient becomes greatly depressed,—the hands and the feet are cold; the bowels are constipated; there is irritation of the bladder; tinnitus aurium is present; there is a feeling of pressure in the head with dreams of a distressing character; then the headache grows in severity and becomes throbbing. After a time trophic disturbances appear, such as rashes in the form of "pimples and swellings," with oedema of the legs, of hands and eyes.

Now and then the patient has seizures of coughing spells, and has insistent fears of some impending lung troubles. Occasionally she has epileptiform attacks with slight tonic and clonic convulsions, accompanied with unconsciousness or semi-consciousness. Some years ago she used to have "attacks of helplessness," and even of complete paralysis. She also suffered from tingling sensations in the extremities, "numbness all over," becoming fully anaesthetic over the whole surface of the body.

An examination of the patient shows her to be greatly emaciated; poorly nourished; skin is dry and crackling. There are a few macules and papules, a few wheals and remnants of dried-up vesicles and blebs. Near the

margin of the mucous membranes some fissures and excoriations are found in various stages of healing and crusting. The tongue is coated, furred and there is a heavy smell from the mouth. The lungs are in good condition. The heart-beat is irregular, aortic second sound is slightly accentuated. Patellar reflexes are greatly exaggerated. The eyes do not accommodate well,—the left eye is somewhat defective in convergence during the act of accommodation. Pupillary reaction is rather sluggish. The tympanic membrane of the left ear is slightly thickened, and hearing is defective on the left side. She also suffers occasionally from noises, "buzzing in the head" and dizziness.

Motor activities and sensitiveness to all forms of sensory stimulations are in good condition. No oedema could be found, except a slight puffy condition below the eyes. Several examinations of the urine showed the latter free from any trace of albumin. Patient can see well, but she gets easily fatigued when reading or sewing,—a darkness then comes over her, and everything seems to be enveloped in a mist which is getting heavier and thicker. Field of vision is normal. No reversion of the color field is present.

Memory for present and past events is excellent. Attention is good, but she cannot keep her attention for any length of time; she then begins to complain of fatigue and sometimes gets an attack of severe headache. Intellectual powers are well preserved, and, in fact, are quite vigorous. Patient is well educated, writes well and has a deep interest in philosophical, especially in theological problems.

Hypnagogic and hypnapagogic hallucinations are well developed; field of vision on closure of the eyes

is very rich in colors. Sleep is greatly disturbed, she suffers from insomnia, and when she falls asleep she has quite elaborate dreams, often of a distressing character. Once she had a visual hallucination of her daughter, and another time she had the peculiar hallucination of the reality of the presence of her daughter, who did not appear to the "bodily senses," but to the "inner mental vision," a form of pseudo-hallucination. She has a yearning after something, she does not know what, and is in constant fear of losing her mind.

The fear of insanity is occasionally so intense that she suffers agony. Her general mood or affective state is one of great depression and misery.

A psychognostic examination by the hypnoidal states revealed the following data:

When at the age of five, the patient happened to see an insane woman in a maniacal condition. The image of that woman never left the patient's thought, conscious or subconscious, so deeply was her mind impressed with that event. She was greatly frightened and the thought kept recurring: "Do little girls get insane?" Since that time she became possessed by the fear of insanity. In her ardent imagination she actually felt that she was getting insane.

When asked about her dreams, the patient was unable to tell anything, but in one of the deeper hypnoidal states she remembered that she used to dream about that insane woman standing near her bed, bending over her and even touching her. Many times she was in such agony of fear that she wanted to cry out, but was unable to do it. When she woke up, she cried in great terror. When the patient gave birth to her child, she was afraid the child would get insane; many a time she

even had the feeling, as if the child was insane.

Thus the fear of insanity is traced to an experience of early childhood, an experience which, having become subconscious, is manifesting itself persistently in the patient's consciousness.

The patient's parents were very religious, and the child was brought up not only in the fear of God, but also in the fear of hell and the devil. Being sensitive and imaginative, the devils of the gospel were to her stern realities. She had a firm belief in "diabolical possessions" and "unclean spirits." The legend of Jesus exorcising in the country of the Gadarenes unclean spirits, whose name is Legion, was to her a tangible reality. She was brought up on brimstone and pitch, with everlasting fires of the "bottomless pit" for sinners and unbelievers. In the hypnoidal state she clearly remembered the preacher who used every Sunday to give her the horrors by his picturesque descriptions of the tortures of the "bottomless pit." She was in anguish over the unsolved question: "Do little sinner-girls go to hell?" This fear of hell made the little girl feel depressed and miserable, and had poisoned many a cheerful moment of her life.

What a lasting effect and what a melancholy gloom this fear of ghosts and of unclean spirits of the bottomless pit produced on this young life may be judged from the following facts:

When the patient was about eleven years old, a young girl, a friend of hers, having noticed the patient's fear of ghosts, played on her one of those silly, practical jokes, the effects of which on sensitive natures are often disastrous and lasting. The girl disguised herself as a ghost in a white sheet and appeared to the patient who was just on the point of fall-

ing asleep. The child shrieked in terror and fainted. Since that time the patient suffered from nightmares and was mortally afraid to sleep alone; she passed many a night in a state of excitement, frenzied with fear of apparitions and ghosts.

When about the age of seventeen, she apparently freed herself from the belief in ghosts and unclean powers, but the fear acquired in her childhood did not lapse, it persisted subconsciously and manifested itself in the form of uncontrollable fears. *Unless specially treated, fears acquired in childhood last through life.** She was afraid to remain alone in a room especially in the evening. Thus, once when she had to go upstairs alone to pack her trunks; a gauzy garment called forth the experience of her ghost-fright,—she had the illusion of seeing a ghost and she fell fainting to the floor.

When about the age of eighteen, she began to teach mathematics in a school and worked hard. Being ambitious to advance, she studied assiduously after she was through with her school duties; she worked hard and worried much over her prospects of advancement. It was from that period that her headaches date as well as her first attack of nervous prostration.

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*"Every ugly thing," says Mosso, "told to the child, every shock, every fright given him, will remain like minute splinters in the flesh to torture him all his life long.

"An old soldier whom I asked what his greatest fears had been, answered me thus: 'I have only had one, but it pursues me still. I am nearly seventy years old, I have looked death in the face I do not know how many times; I have never lost heart in any danger, but when I pass a little old church in the shades of the forest, or a deserted chapel in the mountains, I always remember a neglected oratory in my native village, and I shiver and look around, as though seeking the corpse of a murdered man which I once saw carried into it when a child, and with which an old servant wanted to shut me up to make me good.'" Here, too, subconscious experiences have persisted throughout lifetime.

When she got married, the duties of housewife and of social relations made life still more strenuous. Motherhood served only to increase the nervous strain and anxiety all the more so as her child was constantly ailing up to the age of five. After years of devotion and of motherly self-sacrifice she succeeded in bringing up her daughter, who became the very soul of the patient's being.

What a fearful blow it must have been to this frail woman when her only daughter, in the full bloom of her young womanhood, at the age of twenty, began to ail, to sink in health, and was declared an incurable case of tuberculosis! Day and night did the unfortunate mother watch in anguish over her only child. She actually lived through the distressing cough, the gastric and trophic disturbances, the loss of appetite, the nausea, the inability to retain food, the weakness, the helplessness, and the complete prostration of her daughter who did her best to cheer her poor, suffering mother who, with an aching heart, eyes blinded with tears and with a mind distracted by anguish and anxiety, felt her head in a whirl; choking sensations, darkness, fainting spells began to seize on her, spells of darkness against which she struggled in throes of convulsions.

In one of the hypnoidal states I happened to press on the throat, accidentally producing choking sensations, when the patient began to feel faint and, losing consciousness, became convulsed with epileptiform tonic and clonic contractions. The state of unconsciousness, of semi-consciousness or of *"Dämmerzustände,"* lasted about twenty-five seconds, the patient coming back with a deep sigh and with no memory of

what had taken place during the attack. I was thus enabled to reproduce at will the original attacks.

The patient told me that with all her "faith in the Lord" she rebelled against "Providence." "I have blasphemed the Lord,—He is not as good as a loving mother."

The daughter passed away in the arms of the mother, who from that time on had been living through the disease of her child with all the symptoms of trophic disturbances and death agony, but much more complicated and intensified by the agony which she herself had then undergone. Dress, receptions, visits became painful to her, because of the daughter with whom all those enjoyments have been associated. The whole life experience of that period of anguish has persisted in her subconsciousness and has been forcing itself with all its vehemence on the patient's personal self. All those symptoms, however, disappeared during the treatment.

Thus the whole symptom-complex of the disease could by means of the hypnoidal states be traced to dissociated, submerged, subconscious experiences, or to subconscious sets of systems, coming in the form of attacks of insistent mental states, or of recurrent psychomotor states, now meaningless, harmful, psychopathic.

CHAPTER XXXI

SOMOPSYCHOSIS AND PSYCHONEUROSIS

FROM a clinical standpoint the various psychopathic disturbances may be reduced to two main types: *Somopsychosis* and *Psychoneurosis.*

In somopsychosis the somatic symptoms predominate such as paralysis, contractures, convulsions, or anaesthesia, hyperaesthesia of the various organs, glands, and tissues. The somatic psychoses or neuroses may be further divided according to the symptoms into *motor, sensory,* or *glandular.* The somatic neuroses would comprise the various manifestations of what is at present described in literature as hysteria and neurasthenia, as well as the milder forms of hypochondriasis. In all such diseases the *physical symptoms form the prominent elements of the mental malady.* The patient remains unaware of the underlying mental grounds. So much is this the case that the patient is offended if his trouble is regarded as purely mental in character. The psychic elements, although of the utmost consequence in the causation of the disease, remain unknown to the patient. *The mental side of the malady is submerged subconsciously.*

In the other psychopathic affections, *the psychoneuroses, or neuropsychoses,* the physical symptoms are, on the contrary, few or none at all, while the predominating symptoms are entirely of a mental character. The patient ignores his physical condition, even if any exists, and his whole mind is occupied by mental troubles. Such

conditions are to be found in all obsessions, fixed ideas, imperative impulses, and other allied mental states. Thus, one patient is in agony over the unrighteousness of his conduct; another suffers tortures over the unanswerable question of "What am I?"; another is obsessed by a fear of some mysterious agency, or by a fear of women, or by agonies of suspicions of criminality in her husband, or by religious and moral fears of not having lived up to the proper duties of life.

The two forms of psychopathies are in strong contrast with each other.

In the somatic psychopathies or somopsychoses the patient brings before the physician physical symptoms, —stomach trouble, intestinal pains, soreness of the abdomen, contractures of limbs, headaches, anaesthetic spots of various shapes, or paresis and paralysis of various organs. Hence it is for the physician to discover the underlying psychic states.

In the purely mental forms, the psychoneuroses, on the other hand, the patient entirely omits to describe his physical condition and tells little of it even when he is pressed for it. He usually states that he has always been physically well, and some patients even assert they are sure that they will *always* be physically well, that the whole trouble is purely mental. The patient, in fact, takes special care and time to bring out this point to the physician. "I have no physical trouble," he tells the physician, "all my troubles are mental. If you could cure me of my mental suffering, I would be perfectly happy. I am as strong and tough as a bull; my physical condition is perfect. I rarely have as much as a cold. I can be exposed to any conditions of life and feel all the better for it, but my mind is hell."

The psychosomatic patient lays stress on his physical symptoms and is offended when they are declared to be mental; the psychoneurotic, on the contrary, insists on his mental symptoms and becomes impatient when the physician pays attention to physical symptoms or bodily functions. *This difference between the somopsychoses and neuropsychoses or psychoneuroses is a fundamental one, and is of the utmost clinical importance, both in diagnosis and in treatment.*

The somopsychoses simulate physical and organic nervous troubles. Thus, many "hysterical" forms simulate tabes, or paralysis agitans, hemiplegia, paraplegia, or epilepsy, while many of the neurasthenic, hypochondriacal, and their allied states simulate tumor or cancer of the stomach, intestinal obstructions and glandular derangements, cardiac, laryngeal, pneumonic, hepatic, splanchnic, ovarian, tubal, uterine, renal, and hundreds of other bodily afflictions. The neuropsychoses or psychoneuroses simulate all forms of mental disease, beginning with melancholia and mania, and ending with general paresis.

The psychosomatic patient is in constant terror of being afflicted by some incurable physical disease, such as heart trouble, tuberculosis, kidney trouble, or of becoming a helpless invalid, or of suffering from an incurable, fatal, bodily malady. The psychoneurotic, on the contrary, ignores physical diseases, but he is in terror of insanity.

Thus many of my psychosomatic patients are delighted, for a short period of course, when, after a physical examination, I tell them that they have no angina pectoris, or no valvular trouble, or after a urinary examination that there is no sugar in the urine and no dia-

betes, or that there is no albumin in the urine and no Bright's disease, which was so much dreaded.

The psychosomatic must be assured that he is not an invalid. The psychoneurotic must be constantly assured that he is not crazy. The psychosomatic must be assured that he has no fatal malady. The psychoneurotic must be assured that there is no fear of his becoming insane, and that he need not dread that his "head will give way," and that he will have to be confined the rest of his life in a sanitarium or be committed to an insane asylum.

Neither psychoneurotic nor psychosomatic patients are aware of the real character of their malady. To understand their trouble the physician must investigate their subconscious life. *Both psychoneurosis and somopsychosis are diseases of the subconsciousness.* In the one the mental, in the other the physical, symptoms predominate.

Both groups of patients are completely unaware of the rich subconsciousness that forms the soil of their psychopathic states. Both are ignorant of the underlying, subconscious psychosis. The only difference between the two is that, while the psychoneurotic is at least aware that he suffers from a mental malady, the psychosomatic is even ignorant of that fact,—he is convinced all along that his trouble is purely physical, and is even offended when the psychic origin of his symptoms is suggested to him.

The characteristic of both forms of functional psychosis is the presence of subconscious, pathological nuclei around which clusters the symptom-complex of the disease. *It is this nucleus of sets of subconscious systems that nourishes, guides, and controls the course and man-*

ifestations of the total symptom-complex. Unless this nucleus of the set of subconscious systems is reached and disintegrated, the patient cannot be regarded as cured. The psychopathologist must look carefully, like the operating surgeon, for the subconscious, pathological nucleus which forms the root of the malady.

In both forms of functional psychosis, somopsychosis and psychoneurosis, the pathological nucleus is subconscious, and this means that the root of the trouble escapes the patient's consciousness. The pathological focus is *dissociated* from the rest of the patient's life. In somopsychosis the dissociation is so complete that the patient is not only ignorant of the origin of the symptoms, but he is even unaware of the character of the trouble; he may think, for instance, that he suffers from cardiac trouble and go to heart specialists, when the real trouble is some subconscious emotion, referring to some former experience of the patient's life.

In psychoneurosis the patient may be aware that his trouble is mental, but the nature and root of the trouble escape him as much as they do the psychosomatic patient. The pathological nucleus in both types remains subconscious and dissociated from the patient's conscious life activity. *Dissociation is pathognomonic of functional psychosis in both its varieties, somopsychosis and psychoneurosis.*

In the somopsychoses the line of cleavage in the dissociation runs along the psychic and the physical, the physical symptoms alone being in consciousness, the psychic systems being subconscious. In psychoneurosis the line of cleavage runs along the line of mental states. Emotional states, a few fragmentary ideas persist

in consciousness, while the root of the whole process is hidden in the soil of the subconscious.

The psychosomatic patient is not only deprived of access to the subconscious elements of his malady, but he does not even suspect that such subconscious systems are at the root of his affliction. In fact, so sure is he that everything is well known to him that at first he is surprised at the efforts made to get hold of his subconscious activities and trace the roots of his mental affection. The psychoneurotic patient, however, is harder to handle than is the psychosomatic, inasmuch as the latter has no preconceived ideas about the *mental* nature of his malady.

The psychosomatic patient has, psychopathologically or clinically regarded, a somewhat different attitude from that found in one who is actually affected with a physical malady. In the first place, the character is affected; the patient becomes at times irritable and at other times quite indifferent to what is going on around him. In the second place, the symptoms become accentuated after concentration of attention on them, and tend to lapse when the attention slackens. In the third place, the symptoms form a well-connected system, a kind of a well-told story.

The symptoms do not follow any physiological or psychological connection, but rather a connection characteristic of the logical order of an external event. They come periodically, depending in their appearance on definite stimuli and a determined series of external events. Finally, the psychosomatic patient has a proclivity, without understanding the real reason, for mental treatment of all kinds. It is the psychosomatic patient who feeds the mental scientist, the Christian Scientist

and testifies to the miracles professed by these sects.

This hankering after mental treatment and faith-cures should be taken to mean that, although the psychosomatic patient is unaware of the psychic origin of his disease, he, nevertheless, subconsciously recognizes the real source of his malady, testifying to it by his credulity in faith-cure.

It is from the ranks of the psychosomatics that recruits are drawn that fill the armies of the mental healers and "faith curists," and overflow the offices of the clerical doctors. The testimony of the psychosomatic patient is sincere,—*his symptoms are somatic, with a subconscious psychosis.* The psychosis is the important factor. A patient is psychosomatic, not because he suffers from *actual* physical troubles, but because physical symptoms stand out mainly in his consciousness.

The psychoneurotic person, in contradistinction to the psychosomatic, is not so apt to fall a prey to quacks. This is no doubt due to the fact that he himself is aware of the character of his malady, and the attending physician is not so apt to commit a blunder in his case, and has him referred in time to the neurologist, psychiatrist, and psychopathologist.

The psychoneurotic is characterized by his introspection, by the close analysis of mental states that rise on the fringe of his consciousness. He has in him the making of a good psychologist. His introspection is keen. In this respect his depression widely differs from the depression of the melancholic, whose mental life is laboring under strong inhibition. *The mind of the psychoneurotic is in a state of conflict; he is constantly engaged in an inner, subjective battle royal with his tormenting obsessions.*

It is on this account that he is an excellent subject for psychological, introspective accounts.

States of inner struggle are absent in the psychosomatic, whose attention is fixed on his somatic symptoms without the least comprehension of his psychopathic condition. The introspection of the psychosomatic is entirely occupied with physical symptoms. The introspection of the psychoneurotic is mental, moral, or religious, and is full of mental distress.

The psychosomatic cases should, therefore, be investigated through their subconscious life activities, while the psychoneurotics should be studied both through their upper and lower consciousness or subconsciousness.

Psychopathic affections can be differentiated from the various forms of insanity by the following important symptom: *Readiness of the patient to get an insight into his trouble.* The psychosomatic and the psychoneurotic are characterized by the fact that they are anxious to learn the nature and causation of their trouble. They are eager to learn the psychogenesis of their affection, and will do everything in their power to help the physician in his examination and study of their case. Even in the cases where the idea is fixed, the obsession intense, and the impulse uncontrollable, they are anxious to listen to views different from their own, and, in fact, are always on the lookout for some help to get rid of the insistent, mental states.

No matter how fixed the mental state may be, it will temporarily give way to suggestion and persuasion. No matter how deep and intense may be the emotional state of the psychoneurotic and psychosomatic, it can be distracted and dissipated by the personal touch of some firm

and trusted friend, or by the influence of the confidential physician who has an insight into the nature of the malady. Neither the emotions nor the ideas are immovably fixed,—they are always ready to give way to other associations.

Moreover, the psychoneurotic is always ready to receive such associations, and welcomes them with all his might and main. *There is a great amount of optimism in the psychosomatic and psychoneurotic.* This is clearly revealed in the various religious and mental cults which often delight the heart of the psychopathic patient.

Throughout my experience and study of functional psychosis,—both somopsychosis and psychoneurosis,—I have noticed two important factors which help in bringing about the pathological mental condition, viz., *emotional shocks* and *a predisposition to dissociative states.*

In so far as the shocks are concerned, they must be of a character intimately related to the *most important interests and emotions of the personality as a whole.* The shock must affect the center, the nucleus of personality. *Psychopathic states cannot be produced by shocks which do not affect this central nucleus of personal life.*

The shock to be effective must threaten the very center of one's individuality. The mother and father may become affected in regard to the children, the wife or husband with regard to each other, the lover in regard to his or her love, the ambitious man in regard to the object of his ambitions, the miser in regard to his treasured-up wealth, and the religious and highly moral person in regard to the objects of religion or moral life,

The character of the shock that is capable of producing psychopathic states must be such as to *affect the life existence of the individuality.*

It is, of course, clear that this menace of the shock need not be a real one in the sense of a trauma actually having in itself the power of bringing about a mental shock. The event itself may be insignificant, but it is enough, if the person affected considers the event as sufficiently important to produce ill effects. So insignificant, in fact, may the event-producing shock be that the whole process may have occurred in a dream. I could adduce a number of cases in which the psychopathic condition was traceable to dreams. *Such dreams, however, must have their origin in some actual event or in a series of events, often lapsed from the patient's conscious memory.*

The psychopathologist, however, who regards such a shock as the sum total of the causation of psychopathic states has not yet mastered the rudiments of psychopathology. *The event that produces the shock is but the last link in a whole chain of similar shocks which can be traced far back into the dim lights of subconscious regions, leading back to early child life.*

The psychopathic state is like a plant that has its roots deep in the soil of subconscious life activities; it has its beginning in the very germs of the patient's individuality. *A long series of shocks in childhood must first have shattered the individuality of the patient before the given particular shock can produce the psychopathic upheaval.* Both somopsychosis and psychoneurosis have a natural history, beginning in early childhood.

On the whole, in both somopsychosis and psychoneu-

rosis, there must be a cumulative influence in order that the psychopathic state shall be brought about. Early childhood, subsequent education, and experiences in later life contribute to the final outburst of the psychopathic condition, apparently produced by some one event.

Many persons may experience shocks of an intense character and yet not become psychopathic. This should not be taken to mean that shocks *per se* are not capable of producing psychopathic states, or, in other words, that shocks are not regarded as causes of functional psychosis. It only means that the shock is a contributory cause. The shock requires previous conditions and preparations to bring about a functional trouble of psychopathic character. Rain calls forth no growth from rocks, stones, and pebbles,—seeds and soil are requisite. People do not become psychopathic through the agency of one shock. Subconsciously the ground and seeds are prepared, and the last shock is but the proximate cause, calling forth to life what has been there before.

The last event need not necessarily result immediately in some functional disturbance. There may elapse some time,—a period which may be one of brooding of a subconscious character. In short, the disease may set in slowly, almost imperceptibly; or, the disease may be latent, so to speak, and then be brought out by some slight stimulus of a common-place character, a stimulus with which the patient is fully familiar, and which he would otherwise ignore. *Psychopathic states have a long history of development, reaching in the subconscious far back to early childhood.*

The other factor in somopsychosis and psychoneurosis is *dissociation*. The psychopathic individual has a *predisposition to dissociative states*. It is true that early

experiences and the training of early childhood enter largely into the formation of such a predisposition. Still there is no doubt that heredity has its share. A sensitive nervous system is required,—a sensitive brain highly susceptible to special stimuli of the external environment.

This, of course, does not mean that the brain must suffer from stigmata of degeneration. On the contrary, it is quite possible, and in many patients we actually find it to be so, that *the psychopathic individual may even be of a superior organization.* It is the sensitivity and the delicacy of nervous organization that make the system susceptible to injurious stimulations, to which a lower form of organization could be subjected with impunity. An ordinary clock can be handled roughly without disturbance of its internal workings, but the delicate and complicated mechanism of a chronometer requires careful handling and special, favorable conditions for its normal functioning.

Unfavorable conditions are more apt to affect a highly complex mechanism than a roughly made instrument. It is quite probable that *it is the superior minds and highly complex mental and nervous organizations that are subject to psychopathic states or to states of dissociation.*

Of course, unstable minds are also subject to dissociative states, but we must never forget the fact that highly organized brains, on account of their very complexity, are apt to become unstable under unfavorable conditions. A predisposition to dissociation may occur either in degenerative minds or in minds superior to the average. *Functional psychosis requires a long history of dissociated, subconscious shocks, given to*

a highly or lowly organized nervous system, dating back to early childhood.

As Mosso puts it: "The vivid impression of a strong emotion may produce the same effects as a blow on the head or some physical shock." We may, however, say that no functional psychosis, whether somopsychosis or psychoneurosis, can ever be produced simply by physical shocks. *In all functional psychoses there must be a mental background, and it is the mental background alone that produces the psychosis, and determines the character of the psychopathic state.*

Thus, one of my patients gives the following account: "The nervous trouble (feeling of lassitude, fear of vague evil, fear of shadows fading into darkness, intense depression, loss of appetite and flesh, insomnia, headaches, and visceral disturbances) began in a rudimentary way about a year and a half ago, although I had already been nervous, and was gradually getting more so. At first it would be just what I call 'painful thought,' that is, if I read something that was a story of misfortune or suffering of any kind, or heard of a real case of a similar nature, I could feel how the person must have suffered, felt it as if it were myself. What if that had been me? I shuddered and was afraid. I would go through the most painful of all the sorrowful things I had ever read or known of. It would seem that I was going through the whole experience myself, and then I would hear myself tell the story of suffering, and it was I who had suffered all these experiences. I would begin to believe the story. When the end would come I would go off into a shivering horror that would end in a chill, which would sometimes last for three hours. When the horror would come on I would go out and walk until

I was tired and come home and go to bed without any dinner and sleep the sleep of reaction and complete exhaustion. I slept apparently a dreamless sleep, which sometimes lasted about nine hours. Then I seemed to get better in the daytime, but would begin to dream the whole thing at night, and wake up in a blind, shivering terror."

The dreams terrorized the patient, who, finally, sank into a deep physical and mental depression. As in many other cases, the patient presents a sensitive organization subject to a series of shocks dating back to early childhood. *The terrorizing dreams are hallucinations formed by the play of associations out of fragments of actual former experiences, lived through during the period of trauma.**

*I shall revert to this subject in my forthcoming work *"The Causation and Treatment of Psychopathic Diseases."*

CHAPTER XXXII

THE DIAGNOSIS OF PSYCHOPATHIC STATES

IN the investigation of psychopathic states the psychopathologist finds a strikingly characteristic pathological condition in each individual case. The symptoms are not isolated, they are not the results merely of nervousness, as is usually and superficially explained both by the laity and the physician. The symptoms of a psychopathic case are intimately related and are in each case due to *one underlying* pathological state.

The symptom-complex is grouped round a pathological *nucleus of sets of subconscious systems,* controlling and guiding the morbid manifestations. Success in the treatment of a psychopathic case depends on the ability to get at that pathological nucleus of the subconscious systems and have it disintegrated. Unless this is done the psychotherapeutic treatment is either ineffective or is but a temporary makeshift; it does not really cure, but only helps to cover temporarily a pathological focus.

We must always attempt to get at the central, pathological, subconscious system out of which all the morbid manifestations arise. Thus in a well developed psychopathic case the dizziness, the faintness, the nausea, the indigestion, the hemicrania, anaesthesia, and hyperaesthesia, the fatigue, the abulia, insomnia, and general depression bear severally definite relations to some pathological focus, which the psychopathologist must find by a searching examination before an effective psycho-

therapeutic treatment can be undertaken.

This pathological focus underlying the total morbid symptom-complex can be proven, by various methods, to be *detached,* or as it is termed, *dissociated,* from the patient's normal mental life. In the course of time, if it persists and keeps on growing and proliferating, it may become organized into a parasitic cancerous growth, sapping the vital energies of the normal personality.

This *parasitism* is well brought out in the attitude of the patient, especially in psychoneurosis, towards those morbid manifestations. He regards the whole symptom-complex as foreign to his personality. "When the attack is on," one patient tells me, "I am conscious of everything, and still I have no control." "Something has happened," says another patient, "over which I have no control." "What a fool I am to be troubled by such nonsense; but I cannot help it when it comes."

Another important characteristic is the *periodicity* of remissions in the appearance of the morbid system. The attacks of functioning of the dissociated morbid system run in cycles. During the attack the mind works in a circle. This is an important pathognomonic symptom of psychopathic affected: *cyclical* and *circular* mental movements.

The attack itself is usually sharp and brief in duration and is followed by a long period of depression and worry. It is like a controlling nucleus embedded in a mass of nourishing cytoplasm. *Acute sensory attacks with long intervals of brooding are pathognomonic of psychopathic states.* This *brooding,* of course, may be conscious or subconscious, but it is there, and it is of the utmost consequence for the psychopathologist to uncover it, if he wishes to diagnose the case

scientifically, and introduce a rational therapeutic treatment.

In most, if not in all cases of psychopathic states, somopsychosis and neuropsychosis, the origin of the attack or of the obsession is unknown to the patient. The original pathological focus escapes the patient's knowledge just as it is often beyond the grasp of the practising physician. There is a strong, active, pathological mental focus of subconscious systems in the patient's mind, a focus of which he is not directly conscious.

In order to come to that pathological focus and clean it out, the patient's subconsciousness must be skillfully and thoroughly tapped. This *subconscious* aspect is one of the most important pathognomonic symptoms of psychopathic diseases. It is of great importance in differential diagnosis. If it can be shown that the lost function or affected organ is active *subconsciously,* then *the affection is of a psychopathic character.*

A further diagnostic point is the *overactivity of the stimulated subconscious function. Thus psychopathic anaesthesia, amnesia, is also hyperaesthesia and hypermnesia.* In functional diseases *all losses of functions are also subconscious gains.*

Another symptom well worth knowing in the diagnosis of psychopathic states is the *sudden onset* of the attack. The morbid mental state flashes on the patient's mind, keeps him in agony for a brief period, sometimes for but a few moments, like a *petit-mal* of epilepsy, and then disappears to reappear on some other occasion. *These occasions are not accidental; they have a definite causal relation to the attacks.*

Other states persist in consciousness for some time, but even in such cases *periodicity of remissions* is quite

marked. This characteristic of periodicity of fully developed psychopathic states is so pronounced that some writers describe such cases by the term "psycholepsy," while others classify them under the misused term of "psychic epilepsy."

These states do not belong to the patient's normal associative life, but appear to the patient himself as opposed to his usual normal life-activities. They are dissociated from the rest of his interests, from the rest of his associations and psychomotor adjustments. He does not understand these dissociated states for they have *no meaning* in his present life; they are outlived experiences and reactions, resurrected in the form of hypnoid and hypnoidic-like states. Under certain conditions he is not even aware of them, since they either appear subconsciously, or swamp his personality during the whole period of their activity. The states are essentially subconscious, dissociated states; they come in attacks, in seizures, and manifest themselves, like volcanic upheavals, with extraordinary violence and emotional disturbances.

As pointed out in a former chapter: "One general characteristic of these morbid psychomotor states is the fact of their *recurrence* with the same content of consciousness and with the same, almost invariable psychomotor reactions. The patient thinks, feels, wills and acts in the same way. Subconscious dissociated states belong to the type of recurrent moment-consciousness,—a type characteristic of the lower forms of animal life, a type that responds to the external environment with the same adjustments, with the same psychomotor reactions. From this standpoint we may regard the recurrent psychomotor states as a reversion to lower

forms of consciousness. The suddenness of the attack, the uniformity of the manifestations of the symptom-complex, the uncontrollable, overpowering effect on the patient's personal consciousness are all due to the same underlying condition,—the dissociation of the patient's subconsciousness."

During the predominance of the recurrent states, the *sense of reality* is affected, since the subconscious or dissociated mental states come with an almost uncontrollable insistency and intensity of the sense of their reality. This is especially true of the highly developed and fully systematized *complex recurrent mental states.* This affection of the sense of reality is still more enhanced by the suddenness and violence of the subconscious eruption.

The attacks can be traced to mental trauma, emotional shocks, and especially to experiences of early childhood, to subconscious experiences now purposeless, meaningless, and harmful to the stability of the patient's personality, noxious to the equilibrium of his psycho-physiological organization, and detrimental to the integrity of his psycho-biological adaptive reactions.*

*This last generalization, advanced in my various writings, will be further developed in a forthcoming work.

APPENDIX I

SCHEME OF EXAMINATION

Heredity:

Diseases with especial reference to specific and mental diseases in remote and near relatives, especially parents, brothers and sisters.

Habits of ancestors. Education.

Personal History:

Condition of parents prior to birth, and of mother during gestation.

Birth, labor, whether protracted or not; instrumental delivery or not; whether there were any injuries produced by delivery. Early psychomotor development of patient; when he began to walk, to talk at proper times, to show normal physical and mental development. Character and degree of patient's education.

Occupation; its nature and under what conditions carried on; whether exposed to the influence of toxic agents, impure air, absence of sun light. Overwork, physical, or mental. Domestic conditions; food, sleep, light, air, cleanliness.

Previous diseases, with especial reference to specific and nervous disorders. Supposed cause of present disease. Initial symptoms. Course of disease and treatment up to the present time.

Status Praeseus:

General bodily conditions.

Physical anomaly and assymmetry.

State of nutrition; color of skin and mucous membranes; amount of fat deposit and muscular development.

Respiration; frequency, regularity, and character.

Circulation: Frequency and character of pulse and of heart beat.

Examination of the various viscera of the body, such as digestion, alimentation, etc., and analysis of the urine and, where deemed advisable, of the blood.

Trophic Condition:

Skin; dry or moist; pigmentation, atrophy, ulcerations; condition of hair, nails, teeth, bones and joints; surface temperature and vaso-motor system; secretions, tears, saliva; condition and development of sexual organs and functions.

Reflexes: Footsole, patellar, abdominal, biceps and triceps, periosteal, conjunctival, pupillary (for light and convergence), pharyngeal.

Sexual life, the history of its development.

Kinaesthetic sensations and ideas. Active and passive movements of the various groups of muscles. Movements of eye balls in various directions. Movements of lids in opening and closing the eyes; wrinkling forehead; laughing; whistling; blowing and chewing movements; movements of tongue in various directions; swallowing movements; movements of vocal cords in speech; movements of head in various directions; movements of arms and shoulders, of hands and fingers in various directions. Active and passive movements of trunk, legs, feet and toes.

Motor co-ordination: Equilibrium with eyes opened and closed; walking, standing on one foot with eyes open and closed; power in sitting posture, to place heel of one foot upon toes of other. Ability to produce or reproduce given positions of various extremities with eyes open and closed; such as touching nose with tip of finger, or bringing finger tips together after holding hands apart; power to appreciate small differences in weight in palm of hands, with the hand at rest and when aided by movement.

Power to recognize and localize tactile impressions of various intensity on different parts of body and whether patient is in this respect normal, hyperaesthetic, hypoæsthetic, anaesthetic or paraesthetic.

Recognition of heat and cold and application of dif-

ferences in temperature on various parts of the body.

Appreciation of painful stimuli, normal, hyperalgesic, hypalgesic, analgesic, or paralgesic.

Examination of special senses: taste on either side of tongue, to different stimuli, such as sweet, bitter, sour, and salt.

Hearing, whether normal, hyperacusis, hypocusis, acusis, or paracusis.

Sight: in each eye, normal or defective. Field of vision; appreciation of colors.

Olfactory sense; normal or defective.

Subjective sensations: of heat and cold; of pain; of taste; of smell, etc., whether general or local (during rest and during exertion).

Examination of higher mental functions. Imagination: Visual, motile, audile, etc.

Recognition of concrete objects and of pictures.

Intellectual operations not habitual to the patient.

Power of conceiving abstract ideas.

Logical acuteness (a) for points and distinctions, (b) for comprehension of train of reasoning, (c) for disputation by logical processes.

Voluntary and involuntary attention, strong or weak.

Memory of present and past events.

Comprehension of speech; imitation of speech; spontaneous speech; appreciation of music or melodies. (a) early heard; (b) of such already known to patient; power of patient to imitate or reproduce them, spontaneous singing or playing. Recognition of objects, of letters, of written or printed words and phrases; imitation of them and their reproduction. Naming at sight common objects, numerals, letters, or words. Reading aloud, writing from dictation, numerals, letters, words, phrases. Naming objects through direct perception, hearing, sight, touch, or smell, through all of them or through one sense.

In case of aphasia patient may be unable to recognize an object by sight; an apple, for instance, but might be able to identify it by smell or taste, or the contrary

may be true.

Ability of patient to make himself understood by gestures and to interpret the gestures of others. Ability of patient to make articulate sounds, or to make inarticulate, though rational sounds. Power of patient to make appropriate use of objects. Ability to walk; to interrelate movements, to correlate different space volumes. Ability of patient to dress; to recognize various articles of dress and their use, to handle common utensils, such as spoons, forks; proper use of food.

Attention: persistency of motor processes (a) without distraction, (b) under distraction; whether motor process under these conditions is continued or intermittent.

Amnesic states.

The presence of any of the various forms of amnesia. The presence of double or multiple consciousness, or personality.

Paramnesia:

Is the paramnesia immediate, or does it occur some time after the first reproduction?

Attacks of partial or local loss of consciousness, with or without motor manifestations.

Observations of different forms of automatisms; emergence of subconscious states.

Perception of flow of time.

Sense of localization upon different surfaces of body.

Perception of relative size.

Secondary sensations: Sound photism, taste; odor; photism or phonism; pain phonism; light phonism, etc.

Dynamometric power: rapidity of movements; precision of movements; accuracy of aim; steadiness of hand; intentional and unintentional tremor; abnormal impressionability; (a) starting at slight impressions; (b) involuntary imitations; subconscious motor manifestations; unconscious phonation; slow speech, scanning or staccato speech; speech in which words are run together. Echolalia; involuntary, or impulsive speech. Inverted, or mirror speech; handwriting, steady or

tremulous; mirror writing; handwriting with left hand; observe any manifestations of mirror writing.

Appreciation of different forms, such as letters and figures inscribed on different surfaces of body.

Localization of direction of sounds; appreciation of form; memory and span of prehension; memory for motor processes; suggestibility of the subject.

1. Suggestion by slight stimuli.
2. Choice suggestion.
3. Suggestion of phrases and acts.

Dreams: their nature, character and frequency; vivid or vague, pleasant, indifferent, distressing. Memory of dreams; relation of the dreams to the disease.

Illusions; visual, auditory, olfactory, gustatory, tactile.

Frequency of illusions:

Hallucinations; visual, auditory, olfactory, gustatory, tactile.

Hypnagogic, hypnapagogic hallucinations.

Pseudo-hallucinations.

Frequency of hallucinations.

Disposition—irritable—sensitive to disturbances, vehement in response, persistent in response. Quarrelsome, gloomy, cheerful, dissatisfied, complaining, apathetic, fickle. (In relation to self or environment.)

Predominant emotion—sex, love, joy, hope, suspicion, fear, grief, anger, remorse.

Aesthetic feelings—power of appreciating beauty, power of appreciating the incongruous, power of appreciating the ludicrous, power of appreciating the ugly.

Moral feelings (Duties)—to others, to God, to state, to society, to family, to self. Homicidal tendencies, suicidal tendencies.

Self-indulgence—sex, drink.

Political views, religious views.

Fixed ideas.

Insistent emotions.

Uncontrollable motor impulses, (movements, acts, speech)—automatic, reflex.

Sense of mysteriousness,—anticipation of thoughts, mysterious agencies.

Symbolization.

Formation of new symbolic words and signs.

Character of delusion.

Persistency of delusion.

Change of self—total, partial.

Habitual expressions (attitude, movements, speech) —conscious, unconscious, automatic, imperative, with motivation.

Simple reaction time.

Cognition time.

Discrimination time.

Choice time.

Association time.

Reaction time is the time which elapses from the moment a certain signal is given to the moment the subject reacts with some movement. A signal, auditory, visual or other, is given to the subject who is supposed to react with some muscular movement as soon as he perceives the signal. The moment the signal is given it is registered automatically on a time registering apparatus. The subject's reaction is also registered on the same apparatus automatically. The time line between the two points is the simple reaction time. In simple reaction time only one signal is given and only one particular movement is made as a reaction to the given signal known before. Of course, simple reaction time is really physiologically complex, inasmuch as it requires at least six stages:

1. The stimulation of the peripheral sense organ.
2. Centripetal conduction in the sensory nerve.
3. Centripetal conduction in the sensory centres.
4. Centrifugal conduction in the motor centres.
5. Centrifugal conduction in the spinal cord and motor nerve.
6. Stimulation of muscle to reaction.

Clinical, simple reaction time, given in hundredths of a second, varies from about 0.12 sec. to 0.35, 0.68 sec.

Reaction time varies with the individual, with age, with state of fatigue, with concentration of attention, with practice and with the intensity and quality of signal. Sound gives a shorter reaction time than sight or touch, while taste and smell give the longest reaction time.

The following may be used as a rough clinical method: Have the patient knock with a pencil at a moving sheet of paper as fast as possible for five seconds. Divide the five seconds by the number of points made by the patient on the paper. The result is simple reaction time. Thus if the patient makes 30 points then the reaction time will be 5 divided by 30 or about 0.16 sec.

The experimenter should also find out whether the subject's attention was given to the signal or to the reaction. In the first case when the attention is given to the sense-stimulus, and hence termed sensorial reaction, the reaction time is much longer than when the attention is directed to the movement made which is termed muscular reaction. Thus Lange who first discriminated between the two types of reaction finds that in his case the sensorial time averaged 0.23 sec. while the muscular 0.12 sec. (All the values of clinical reaction time are given in hundredths of a second.)

Cognition time is determined by having the subject react as soon as a visual stimulus, such as color, or auditory, such as sound or a word is identified, or any other sensory stimulus is cognized. The time when the stimulus is given and the time when the reaction comes are chronographically registered. From this should be subtracted the subject's simple reaction time which should be determined separately. The cognition time varies from about .03 sec.-0.05 sec.

Discrimination time is the time of reaction which takes the subject to identify one of two or many stimuli. Two or more stimuli are given and the subject is to react when he identifies a definite stimulus. The stimuli and the reaction made by the subject are registered

automatically, and the interval between the two is found out. From this time should be subtracted the simple reaction time and the cognition time. Discrimination time varies from about 0.15 sec. to 0.10 sec.

Choice time is the time it takes the subject to react with a definite movement, such as with the right or left hand to a definite stimulus. From this must be subtracted the simple reaction time and cognition or apperception time. The choice time varies from 0.06 sec. to 0.4 sec. according to the complexity of the movements.

Association time is the time it takes for the formation of an association. The subject is given a word and he is supposed to reply with another word as soon as possible. The time of the word given and the time of the answer are registered automatically. The interval is the time requested from which however should be subtracted the simple reaction and the apperception or cognition time; the result is the association time. The association time varies from 0.59 sec. to 0.34 sec.

For clinical purposes a stop watch will do. The moment a word is given to the patient the watch is set going and is stopped as soon as the patient replies with some word. In fact, an ordinary watch will do as well. Of course this method of taking association time is not accurate, but we must remember that all we need is the clinical relative estimate of the patient's condition. As Wundt insists "The value of these figures is not their absolute magnitude, but their utility as *checks* for *introspection.*"

Suggestibility in Waking State.

Hypnoidal state.

Hypnoid state.

Hypnoidic state.

Hypnolepsy.

Hypnotization.

State of Hypnosis—sensory suggestions, motor suggestions, post-hypnotic suggestions, amnesia, personality metamorphosis, hallucinations.

EXAMINATION FOR APHASIA

I. Presence of orientation, space, time.

II. What is patient's power:

Of producing articulate sounds?

Of comprehending spoken words?

Of imitation or reproduction of speech?

Of spontaneous speech?

Of utterance of sounds, words, and of their combination into phrases and sentences?

Of analysis of spoken words into sounds and their reverse process of synthesis?

Test with more familiar and less familiar or even unfamiliar words.

III. What is the patient's power of visual recognition of objects and making proper use of them?

Of pictures?

Of written and printed words?

Of letters?

If he cannot name them, make signs such as pressing the hand a number of times.

Test with more familiar and less familiar or even strange objects, foreign words.

IV. What is patient's power of picturing or representing images, when eyes closed?

V. What is patient's power of naming objects:

a. When looking at them?

b. When eyes closed?

VI. What is patient's ability of naming letters? Of reading words?

If he cannot name spontaneously (voluntarily), can he understand when it is done for him? can he repeat the name soon after? How long can he remember, when recognizing name of object, letter, word on being told?

Test with the more familiar and then with the less familiar.

VII. What is patient's power:

Of writing?

Of copying?
Of writing from dictation?

VIII. What is patient's power of recognizing and naming objects through direct perception of the different senses, such as hearing, touch, smell, etc.?

If patient cannot speak nor write,

IX. What is patient's power:
Of making himself understood by gestures, and of interpreting gestures of others?

X. What is patient's power of counting?
Of working the elementary operations?
Of solving arithmetical problems?

XI. What is patient's power:
Of memorizing (with a given time and with different intervals)?

XII. What is patient's power:
Of giving a connected account of his history?

APPENDIX II

THE HYPNOIDAL STATE OF SIDIS

BY

T. W. MITCHELL, M. D.

(*Presidential address to the Psycho-Medical Society, London, January* 26, 1911.)

With Dr. T. W. Mitchell's kind permission I take the pleasure of reprinting from the English *"Transactions of the Psycho-Medical Society"* his valuable presidential address on the hypnoidal state:

"Our knowledge of the efficacy of suggestion in the treatment of morbid conditions is apt to bias our judgment in regard to the value of other psychotherapeutic measures and in regard to the interpretation of the results obtained by the employment of such measures. We know how powerful and how far reaching is its action, we know how subtle and indirect may be its use, we know so well the difficulty of eliminating its possible influence in every form of treatment whatsoever, that we may be inclined to ascribe to its virtues results that are in part at least dependent upon other factors. And although it is probable that the importance of suggestion in the domain of psychotherapy can never be gainsaid, and that the increased suggestibility brought about by the induction of hypnosis cannot be denied, yet we are bound to examine any mode of psychic treatment that is put forward by responsible men, and to appraise without prejudice the theoretical considerations advanced by them in explanation of their results.

"We know the efficacy of suggestion, and we know it is a good rule of method not unnecessarily to multiply our causes; but we also know that no scientific dictum has been more productive of advance in knowledge than that which tells us to examine our residues. The history of Science affords us many instances in which

the neglect of residual phenomena in experimental research has led to the overlooking of important facts, and prevented investigators from making discoveries which, had they paid due attention to their residues, they could hardly have missed. The great chemist Cavendish probably missed the discovery of argon because in his estimate of the nitrogen of the air he neglected a residue which his experiments showed him could not be more than 1-120th part of the whole. More than a hundred years afterwards this residue was accounted for by the discovery of argon.

"Now in the history of psychotherapy, from its earliest beginnings down to our own time, we find many cases where the circumstances under which curative results have been obtained render it difficult for us to range these results under the category of the therapeutics of suggestion. The mesmeric operator, by a prolonged series of passes, induced a trance condition which in itself appears to have had a curative influence. In other instances benefit was obtained when no evidence of the mesmeric state was to be found. We try to hypnotize a patient and fail, but while he lies quiescent we give him curative suggestions which seem to be effective. We ask a patient to lie quietly with closed eyes while we murmur therapeutic suggestions in a monotonous voice, and sooner or later he derives great benefit from this process.

"Such cases as these may be regarded as the residual phenomena of the therapeutics of suggestion, and just as Cavendish and his successors too readily assumed that all the so-called nitrogen of the air was the same as the nitrogen of nitre, so we may be missing some important truth if we too readily assume that all these therapeutic results are due solely to suggestion. The value of suggestion during hypnosis is well attested, and the possibility of effecting physiological and psychological change by its means is supported by a large amount of experimental evidence. But evidence of this kind is greatly lacking in regard to suggestion without

hypnosis, and until it is forthcoming we are justified in receiving with some suspicion accounts of the therapeutic efficacy of suggestion in the waking state. We seem bound to consider whether some state of consciousness intermediate between waking and hypnosis may not be artificially induced and utilized for the purpose of giving therapeutic suggestions. We should also keep open minds in regard to the possible influence of agencies other than suggestion in every form of psychotherapeutic practice.

"The scientific investigation of states of consciousness intermediate between waking and hypnosis is a contribution to psychology and psychotherapy which we owe practically to one man—Dr. Boris Sidis of Brookline. A research into the nature of suggestibility carried out by him some thirteen or fourteen years ago led him to formulate certain laws and conditions of normal and abnormal suggestibility. In order to get suggestibility in the waking state he found that certain conditions have to be complied with. Attention must be fixed, but it must be distracted from the suggestion. There must be monotony of impressions, limitation of voluntary movements, and consequently a limitation of the field of consciousness. He regards hypnosis (abnormal suggestibility) as "a disaggregation of consciousness, a slit, a scar produced in the mind that may extend wider and deeper, ending at last in a total disjunction of the waking, guiding, controlling consciousness from the reflex consciousness." Normal suggestibility he believes to be of a like nature—"it is a cleft in the mind, only here the cleft is not so deep, not so lasting, as it is in hypnosis or in the state of abnormal suggestibility; the split is here but momentary, evanescent, fleeting, disappearing at the very moment of its appearance."

"According to Sidis there is no suggestibility without disaggregation of consciousness. Suggestion in the waking state is effective only when limitation of the field of consciousness is produced by the conditions under which the suggestion is given. Suggestibility is an attribute

of the subconscious, and only when there is a disaggregation of consciousness as a whole is it possible to appeal directly to the subconscious. Now in the treatment of psychopathic disorders we often find it desirable to get into communication with the subconsciousness of our patients, not primarily for the purpose of giving suggestions, but in order that we may discover mental material which has become dissociated from the waking consciousness. So far as I can discover from the writings of Dr. Sidis, it was in order to determine whether certain cases of amnesia were merely disaggregative, and therefore curable, or absolute and incurable, that he first made use of the conditions of normal suggestibility as a means of gaining access to the subconscious for diagnostic or therapeutic purposes. The same end may be obtained by the induction of hypnosis, but hypnosis cannot always be easily induced, and sometimes it is objected to. But "where hypnosis is not practicable, and the subconscious has to be reached, we can effect a disaggregation of consciousness, and thus produce an allied subconscious state by putting the patient under the conditions of normal suggestibility." Sidis maintains that by keeping the patient for a short time under the conditions of normal suggestibility we induce a peculiar mental state which he has named *the hypnoidal state*. The process by which it is induced he calls *hypnoidization*.

"Many different methods of hypnoidization may be employed, but they all fulfil the main requisites for the production of normal suggestibility, namely, monotony and limitation of voluntary movement. In his work, *The Psychology of Suggestion* (1898), Sidis gives the following account of his original method: "The patient is asked to close his eyes and keep as quiet as possible, without, however, making any special effort to put himself in such a state. He is then asked to attend to some stimulus, such as reading or singing. When the reading is over, the patient, with his eyes still shut, is asked to repeat it, and tell what came into his mind during

the reading, during the repetition, or after it. Sometimes, as when the song-stimulus is used, the patient is simply asked to tell the nature of ideas and images that entered into his mind at that time or soon after."

"In his *Studies in Psychopathology* (1907) he writes: "As modifications of the same method, the patient is asked to fixate his attention on some object, while at the same time listening to the beats of a metronome; the patient's eyes are then closed; he is to keep very quiet, while the metronome or some other monotonous stimulus is kept on going. After some time, when his respirations and pulse are found somewhat lowered, and he declares that he thinks of nothing in particular, he is asked to concentrate his attention on a subject closely relating to the symptoms of the malady or to the submerged subconscious state."

"Writing in 1909 on *The Therapeutic Value of the Hypnoidal State,* he says: "The procedure of hypnoidization is quite simple and may be described as follows. The patient is told to close his eyes and keep very quiet. He is then asked to attend to some monotonous stimulus, such as the beats of a metronome, or listen to a continuous note produced by a tuning-fork, or to smell some pleasant odour, or simply to submit himself to a gentle massage in which touch and pressure are of uniform intensity. This should be carried out in a room where it is dark and quiet. Fatigue, physical and mental, especially emotional, is a favourable condition. A prolonged warm bath with relaxation is favourable. A predisposition to sleep is helpful. It is therefore best to make the first attempt at hypnoidization late at night, when the patient is both tired and sleepy. In most cases darkness, quietness, repose, fixation on a bright point and listening to the monotonous buzzing of an inductorium are conditions favourable to the induction of the hypnoidal state, even at the very first attempt."

"It may be observed that the first description is specially applicable to the investigation of cases of amnesia,

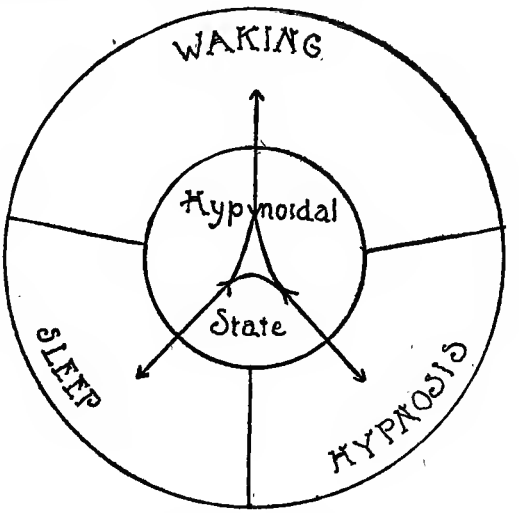
The second method described would apply more particularly to the use of hynoidization as a means of discovering dissociated complexes of a pathogenic nature. In the last description stress is laid on the induction of the hypnoidal state as an end in itself.

"By the use of these or similar methods a state of consciousness is induced which differs from full waking but is not hypnosis or ordinary sleep. The patient is apparently awake and in possession of all his faculties, but scraps of dissociated memories, which he cannot ordinarily recall, keep rising into consciousness. The whole feeling-tone becomes one of acquiescence and indifference. Pulse and respiration become diminished, but are liable to occasional disturbances. Fluctuations of sensory acuteness, sudden apparently unaccountable starts, and a slight tendency to resist any change of posture of limbs or body, without actual catalepsy, may be observed. But the condition is essentially an unstable one and constantly varies in depth. At one moment the patient may be practically in the ordinary waking state, at another he may be on the very brink of hypnosis or of sleep. Yet on the whole it is a state of rest and calm. Mental and physical activity are relaxed, emotional excitement becomes stilled, and suggestions meet with little resistance.

"The hypnoidal state is an intermediate territory, on the border-land of waking, sleep, and hypnosis. In the course of a valuable experimental study of sleep in man and the lower animals, Sidis discovered that the hypnoidal state is a phase of consciousness which is passed through in every transition from one of these states to another. In passing from the waking state to ordinary sleep or hypnosis, there is always a longer or shorter hypnoidal stage. In the practice of hypnoidization the patient sometimes drops into hypnosis, or he may fall asleep without touching on hypnosis. And so also, in awakening from sleep or from hypnosis, the hypnoidal state has to be passed through. Sidis found that the farther we descend in the scale of animal life, the more

important does the hypnoidal state become in relation to bodily rest and recuperation, and he concludes that it is the primitive rest-state out of which both sleep and hypnosis have been evolved.

"The relation to each other of waking, sleep, hypnosis, and the hypnoidal state may be represented in a diagram in which the primitive hypnoidal state is regarded as a nucelus from which the segments of the larger circle, waking, sleep, hypnosis, have arisen. The transition from one of these segments to another can take place through the central territory with which they each have relations.



"The spontaneous occurrence of the hypnoidal state in man is as a rule merely a transitory stage in the alternation of waking and sleep. From the point of view of evolution it is a vestige derived from a long race of ancestors, a rudimentary function which has been superseded by the more highly specialized rest-state, sleep. But it can be artificially induced and maintained by the methods which have been described, and it can be uti-

lized with effect in the treatment of psychopathic disorders.

"The therapeutic use of the hypnoidal state is a somewhat complex subject, for hypnoidization may be employed merely as an adjunct to other methods or as a curative measure in itself. To understand the claims which Sidis puts forward for it at the present time, we cannot do better than to examine the types of cases in which it has been used by Sidis himself at various stages in the development of his practice of it. The full record of his use of hypnoidization is in the account of the well-known Hanna case, given in *Multiple Personality* by Sidis and Goodhart. (See Sidis, *Psychology of Suggestion,* Ch. XXII, XXIII.) This was a case of total amnesia, following a severe injury. The patient, a cultured clergyman, was reduced to the mental condition of a new-born child. All his former acquisitions and memories seemed to have entirely disappeared, and he had to start learning everything again from the beginning. When he was put into the hypnoidal state various fragmentary experiences of his past life emerged into consciousness, demonstrating to his observers that his lost memories were merely dissociated and not destroyed. The same method was made use of in other cases of amnesia, and it was found to be of great assistance in effecting the resurrection of dissociated mental material and its reintegration in consciousness.

"With the progress of his studies in psychopathology, the reintegration of consciousness became, for Sidis, the aim of all therapeutic endeavour in connection with maladies that are associated with, or produced by, mental dissociation. The recurrent psycho-motor states of functional psychosis, insistent ideas, imperative concepts, persistent or periodically appearing emotional states, so-called psychic epilepsy and other states of dissociation, all lent themselves to treatment by hypnoidization. By its means the dissociated complexes could be recovered, the psychogenesis of the malady could be

traced, a synthesis of consciousness effected, and the patient thereby cured. As his confidence in his method increased, Sidis gradually extended its employment, until at the present time he seems to use it in every kind of disorder in which psychotherapy is indicated. Writing in 1909, he says: "All cases of a psychopathic character admit of treatment by hypnoidization. This, however, is too broad a statement, as the hypnotic state is far more powerful and attains its end in a shorter time than the hypnoidal state. In those cases therefore where hypnosis can be used, it should by all means be employed. There is, however, a far larger number of cases where hypnosis is not quite easy to induce, either on account of the patient himself or on account of unfavourable external circumstances. In such cases, and they form the vast majority of psychopathic cases, the hypnoidal state is of the utmost importance from a diagnostic, psychopathological and therapeutic standpoint." It is thus as a substitute for hypnosis, when the induction of the hypnotic state is for any reason impossible, that Sidis recommends treatment by hypnoidization.

"Now, it might be inferred that in using the hypnoidal state as a substitute for hypnosis, we should have to rely mainly upon the *suggestibility* of the state in the one case as in the other. We might suppose that suggestion during the hypnoidal state is the essential part of the treatment. But surprisingly little stress is laid by Sidis on this part of the technique. The most that he says of it is that "the suggestibility of the state, if skilfully handled, is apt to increase the therapeutic efficacy." Nor is it in its usefulness as a means of enabling us to get into touch with dissociated mental complexes, and thereby to assist in their reintegration in consciousness, that the sole or chief therapeutic value of the hypnoidal state exists. He says, "once the hypnoidal state is induced by any of the various methods of hypnoidization, we can either attempt to follow up the history and the development of the malady, or we

may chiefly work for the therapeutic effect and treat the present symptoms. It is, however, advisable from a purely practical therapeutic purpose to combine the two procedures, as the cure is then far more effective and far more stable. In cases where the history of the origin and development of the disease could not be traced on account of the age or unintelligence of the patient, the therapeutic effects alone of the hypnoidal state have been utilized. The results are not so satisfactory so far as scientific information is concerned, but they are nevertheless of great benefit to the patient."

"It would appear, then, that Sidis ascribes some special therapeutic virtue to the hypnoidal state, quite apart from the suggestibility which characterises it, and apart also from the assistance which it gives us in tracing the pathogenesis of psychopathic disorders. On what, then, does this special therapeutic virtue depend? According to Sidis, it depends on the fact that through the hypnoidal state access is gained "to the stores of potential, subconscious, reserve energy, which by a liberation of energy bring about a reassociation and synthesis of the dissociated mental systems underlying the symptoms of the disease. The therapeutic value of the hypnoidal state consists in the liberation of reserve energy requisite for the synthesis of the dissociated systems."

"Before going on to consider this contention, it will be well to examine the practice of hypnoidization in regard to its value as a method of employing suggestion, and as a means of facilitating the recovery of lost or dissociated memories.

"If Sidis is right in supposing the hypnoidal state to have curative value in itself, it will be very difficult to determine how much importance we should ascribe to suggestion during the state, even when it is persistently used and relied upon by the physician as the essential therapeutic measure. Sidis gives practically no detailed record of his use of therapeutic suggestion in the hypnoidal state, and other observers who have reported

their experience of hypnoidization have done so almost exclusively with reference to the recovery of dissociated memories.

"Perhaps the best example of the use of suggestion as an exclusive therapeutic measure in the hypnoidal state is to be found in the practice of Dr. Bramwell's method of treatment by suggestion. I think there can be little doubt that by his method of giving suggestions Dr. Bramwell induces in his patients a state of consciousness which is identical with the hypnoidal state of Sidis. But in this mode of treatment there is, besides the suggestions, a prolongation of the hypnoidal state; and if the hypnoidal state in itself has therapeutic virtue, it is manifestly difficult to be sure how much of Dr. Bramwell's good results is due to suggestion and how much to the postulated virtue of the hypnoidal state. If, however, we disregard the supposed virtues of hypnoidization by itself, there is good evidence to show that in some cases valuable results may be obtained by the use of suggestion in the hypnoidal state.

"The value of hypnoidization in the resurrection of dissociated memories is that which is perhaps most firmly established. And this applies not only to the restoration of the forgotten experiences of ordinary amnesia, but to the recovery of dissociated memories that are of pathogenic significance. The most striking work that has been done in this connection is to be found in the publications of Freud and his school on psycho-analysis; but the general principle of the reintegration of dissociated mental complexes as a curative measure in the treatment of the psycho-neuroses has been arrived at independently by several workers. Sidis himself has insistently taught that reassociation of dissociated complexes effects a cure of psychopathic disease.

"But although Sidis uses the hypnoidal state for psycho-analytic(?) purposes, in so far as by its means he brings back to consciousness pathogenic experiences that cannot be recalled by ordinary association, he does not believe, as the Freudians do, that this process is in itself

curative. He thinks that "the information of the psychogenesis given by the patient is valuable only in so far as by a systematic course of direct and indirect suggestion, by mediate associative and immediate associative suggestion, by substitution, disintegration, and synthesis, both in the waking and hypnoidal states, we help to *transform* the associative course and emotional tone of the patient's mental life."

"We must remember that Sidis admits that all the lost memories that can be recovered by hypnoidization can be more easily recovered if hypnosis can be induced. The realm of the subconscious laid bare in patches in the hypnoidal state is the same as that which is laid bare in its entirety during hypnosis. But those who are familiar with Freud's views will remember that he deprecates the use of the hypnotic state for purposes of psycho-analysis, on the grounds that whilst in hypnosis the resistances to the emergence of pathogenic memories are lessened in some directions, they are made more intense in others. The region of consciousness laid bare by the induction of hypnosis does not always contain all the pathogenic material whose recovery is necessary, and the psychic force which prevents the emergence of this material into the waking consciousness is at least equally effective in preventing its emergence into the hypnotic consciousness. In my own experience I have found this resistance to be very great in the hypnotic states of patients suffering from the graver forms of hysteria.

"If then, in such cases, hypnoidization be no more efficacious than hypnotization, it would seem that Freud's method is the best for the purpose of psycho-analysis; but I think it is possible that in some cases the hypnoidal state may have a superiority over hypnosis in this respect which Sidis does not explicitly claim for it. Indeed, it seems probable that the hypnoidal state may be the best condition of consciousness in which to make use of Freud's technique(?). Sidis has expressed the opinion that some of Freud's success may be due to the

unconscious use of the hypnoidal state, and the conditions under which Freud conducts his analysis render this supposition not improbable.

"But in expressing this view Sidis is not referring to Freud's success in conducting the psycho-analysis. He does not mean that by the unconscious use of the hypnoidal state Freud renders easier the discovery of pathogenic complexes. What he means is that Freud by his method of conducting the analysis unconsciously induces the hypnoidal state, and that his *therapeutic* success may be due in part to the virtues inherent in the hypnoidal state rather than to the psycho-analysis. This inherent virtue of the hypnoidal state is the most interesting claim made by Sidis in regard to the practice of hypnoidization. In his later writings he insistently maintains that the use of hypnoidization alone, without suggestion or psycho-analysis (?), is sufficient to cure certain morbid conditions. He bases this claim on the fact that he has found the hypnoidal state effective towards this end, and he interprets his results as being due to a release of reserve energy which has been locked up in the inhibited and dissociated systems or complexes.

"The principle of reserve energy is based upon a wide generalization of facts, namely, that far less energy is utilized by the individual than is actually at his disposal. In the struggle for existence, those forms of life which have accumulated a store of reserve energy that can be drawn upon in emergencies, have the best chance of survival. The more complex an organism becomes, the greater is its need to avoid reaction to every passing stimulus. Such unrestrained reactions must be inhibited or there will be a wasteful expenditure of energy, which will leave the organism unprepared for occasions of stress in its struggle for life. The inhibitions increase with the growth in complexity of the nervous system, and they are brought about by the multiplicity of associations that are formed in the course of phylogenetic and ontogenetic evolution. Nothing so clearly marks

off the higher from the lower races of mankind as the amount of inhibition they show in regard to instinctive or immediate response to external stimuli. The inhibitions exercised by civilized man are a consequence of the multiplicity of associations which all his mental complexes have acquired, and it is the increase of inhibitions that has led to that accumulation of reserve energy, ever ready to be called upon in emergencies, which has made him master of the world.

"When we weigh the considerations for and against a certain line of conduct, the delay in our response to the stimulus is due to the inhibitions exercised by the manifold of associated complexes that have been aroused to function. These complexes exercise an inhibitory influence on the complex which has been stimulated. We are familiar in experimental psychology with the notion of a stimulus-threshold, and the effect of an increase of associations is to raise the stimulus-threshold of a complex. A complex that has many associations will not be so readily aroused to function as one that has few.

"Now if a complex from any cause becomes dissociated, it drops out of the personal life and cannot be set in action through its ordinary sensory or associative channels. It will then appear as if its stimulus-threshold were very high. But in fact, if we can by any means tap the dissociated complex, its threshold will be found to be very low. And this is what we should expect. Cut off from association with other complexes which were wont to exercise upon it an inhibitory influence, it now reacts to minimal stimuli and manifests itself with great intensity. Freed from the restraining influence of its normal associations, its locked-up energy is expended in wasteful and inappropriate activity. This is well illustrated in attacks of so-called psychic epilepsy and in the psychomotor reactions of other dissociated states.

"In a dissociated complex energy is held in reserve which cannot be drawn upon for the requirements of

the individual, and if by any means this energy comes to be released, it is expended in ways that are worse than useless as regards the adjustment of the organism to its environment. And even when no dissociation has occured, the inhibitions exercised by associated complexes may, under certain circumstances, be so great that a complex may be practically cut off from the functional life of the individual, and its reserve energy rendered unavailable. Here the result is due, not to the dissociation of the complex, but to the raising of its threshold so high that normal stimuli are inadequate to arouse it to function. In the one case we have a complex with a very low threshold, functioning only sporadically and excessively because it is dissociated. In the other we have a complex, still functionally related to its associated complexes, but with a stimulus-threshold so high that it cannot be overstepped by the ordinary stimuli of life. In one case energy is stored and then wastefully expended; in the other case energy is stored, but it is unavailable. In both cases, so long as the dissociation or the inhibitions continue, nervous energy is lost to the individual and his mental and physical life is impoverished.

"Now these are the conditions met with in functional psychosis and in the psychoneuroses, and if we can restore the dissociated functions, or break down the inhibitions, we shall liberate the reserve energy of the dissociated and inhibited complexes, re-establish normal associations, and restore the patient to health. Sidis maintains that this end can frequently be obtained by means of the hypnoidal state. In this state there is a lowering and redistribution of thresholds. Access is gained to the reserve energy of dissociated complexes, and the energy so available assists in repairing the breaches of associative continuity The high thresholds of inhibited complexes are lowered and reserve energy is liberated. "The overacting dissociated systems with their automatic reflex reactions may form associations with other systems and thus become inhibited as well as

controlled in their function by the voluntary activity of personal consciousness, while the inhibited systems with their raised thresholds and accumulated reserve energy are set to function." The reintegration of the dissociated and inhibited complexes is accompanied by a new feeling-tone, a fresh emotional energy, which sometimes amounts to a complete transformation of personality.

"These are the principal points which seem to claim attention in regard to the hypnoidal state. It is maintained by Sidis that a definite state of consciousness, different from waking, sleep, and hypnosis, is brought about by subjecting the patient to the conditions of normal suggestibility, namely, monotony and limitation of voluntary movement. It is a state in which there is a variable and fluctuating disaggregation of consciousness, whereby a partial and intermittent access to the subconscious may be obtained. The intercourse with the subconscious so established may be utilized for the purpose of giving therapeutic suggestions, or for the recovery of the submerged memories of simple amnesia and for the discovery of dissociated complexes of pathogenic significance. Finally, the hypnoidal state may be employed as a therapeutic agency in itself, by virtue of its power of lowering and redistributing the thresholds of inhibiting and inhibited complexes, and so releasing reserve energy which assists in the restoration of normal associations. This, according to Sidis, is its chief therapeutic value, and it is a claim which, if substantiated by the experience of other observers, will entitle the method of hypnoidization to be considered a discovery of the first rank, and a most noteworthy contribution to psychotherapeutics.

"I do not desire on this occasion to enter into any critical examination of the views put forward by Sidis in explanation of his therapeutic results. For practical physicians the most important matter at the present time is the fact that such results have been obtained by the use of the methods which Sidis has described in his

writings on the hypnoidal state The whole subject is relatively new, and I do not think we have had sufficient experience of the method to be justified in having very decided views one way or another in regard to its usefulness. My own experience, so far as it goes, tends to corroborate in every respect the claims put forward by Sidis. I have observed the good effects of the hypnoidal state apart from any other measure, and whether or not his doctrine of the lowering and redistribution of thresholds and the release of reserve energy affords an adequate explanation, I have little doubt that continued treatment by hypnoidization is sometimes of marked benefit in psychopathic disorders."

APPENDIX III

THE HYPOTHESIS OF PHYSIOLOGICAL TRACES AND HYPNOSIS

In *Folia Neuro-Biologica,* Band VII, 1913, T. Brailsford Robertson advances an interesting physiological theory as an explanation for the concomitant physiological manifestations of consciousness in general and of hypnosis in particular. I quote Robertson at some length so that the reader should have a clear idea of the hypothesis. Of course, the hypothesis is only provisional and helps the reader to the conception of a possibility of picturing to oneself the physiological and chemical processes concomitant with the phenomena of consciousness, normal and abnormal. Our data of the physiological processes concomitant with mental activities are so scanty and vague that the best that can be done is to stick to facts and describe mental phenomena in terms of consciousness:

"*The chief value of the experimental evidence which has so far been presented lies in the fact that in every detail it goes to support and confirm the theoretical reasoning which, apart from this evidence, has led us to infer that the processes which underlie and determine the activities of the central nervous system* (*and therefore the physical correlates of mental phenomena*) *are autocatalysed chemical reactions.*

"We may however, approach the question experimentally from an entirely different point of view and in this way acquire evidence of a much more general character. As we shall see, the evidence thus acquired emphatically supports the conclusions already arrived at or indicated in the diverse ways enumerated above.

"The time-relations which are displayed by autocatalysed chemical reactions are in the highest degree characteristic and have been very extensively studied.

All ordinary reactions at constant temperature whether catalysed or uncatalysed, continuously and regularly fall off in velocity from the moment at which they begin. Autocatalysed reactions, on the contrary start relatively slowly, but, as the initial stages of the reaction liberate more and more of the catalysor, they proceed more and more rapidly until a point is reached at which the decrease in the active mass of the reacting substance balances the increase in the active mass of the catalysor and the velocity of the reaction progressively decreases. The only other reactions, so far as our knowledge extends at present, which display positive acceleration, that is, which increase in velocity as they proceed, are certain catenary reactions, that is, reactions which proceed in two or more stages. Autocatalysed reactions may, however, be distinguished from catenary reactions by their symmetry. In the majority of autocatalysed reactions the first half of the reaction, during which the velocity is increasing, occupies the same period of time as the second half, during which the velocity is decreasing. Catenary reactions on the contrary, are not symmetrical; the period of time occupied by the first half of the reaction bears no simple relation to the period of time occupied by the second half of the reaction.

"If, now, the chemical processes which underlie the activities of the central nervous system are autocatalytic in nature, then we should expect to find, among the time-relations of these activities, the highly characteristic time-relations which distinguish an autocatalysed chemical reaction and, in point of fact, as I have elsewhere shown, the relationship which subsists between the number of meaningless syllables memorised and the time spent in learning them is that which is characteristic of the progress of an autocatalysed chemical reaction. Similar time-relations are displayed in the performance of other forms of intellectual effort, and the Weber-Fechner law of perception is directly deducible from the assumption that the central processes which underlie and determine the rate of perception are auto-

catalytic.

"It is in the performance of the neuro-muscular response to a simple volition, however, such as that involved in drawing a straight line that these time-relations are exhibited in their simplest form. By means of a device originally employed by Loeb and von Koranyi, I have measured the relationship between the time (estimated from the inception of movement) and the distance moved over by the hand in drawing a straight line at a fair rate of speed.

"*The time-relations which are displayed in this process are identical with those which are displayed by an autocatalysed chemical reaction.* The symmetry of the relations renders it very unlikely that catenary reactions play any appreciable part in determining the rate of the neuro-muscular response.

"Upon the threefold basis which we have thus briefly reviewed of Deduction and of Direct and Indirect Experimental evidence we may venture, I think, with a fair measure of confidence, to erect the *working hypothesis* that the processes which underlie and condition the various activities of the central nervous system are, primarily, *autocatalysed chemical reactions.* The utility or non-utility of this hypothesis in the further elucidation and correlation of the activities of the central nervous system may be trusted to justify or condemn its employment. I am about to show that this hypothesis enables us to correlate in a satisfactory manner the various phenomena encountered in hypnosis and in allied conditions, both with one another and with the more familiar phenomena of perception, memory, etc.

"Adopting the working hypothesis outlined above we perceive that the canalisation hypothesis of Exner can now be expressed in a much more definite and concrete form. Each incoming stimulus carves out for itself or deepens a pre-existing channel in the central nervous system, but the channel is not a trough formed by the physical displacement of particles, it is a chemical channel, a thread or trace of the autocatalyst of central nerv-

ous activities, a thread which need not necessarily be supposed to be more than a few times the diameter of "the sphere of molecular influence" in width. This deposit necessarily follows faithfully the path pursued by the original impulse and permits succeeding impulses to pass over the same path more readily by virtue of its presence. It is possessed, of course, of a definite spatial location, but, and this is a very important point, if by any chance it should be obliterated or destroyed it is not irreplaceable even if the continuity of the original path be forever interrupted. For it is only one of a conceivably enormous number of paths which might be traversed by a stimulus in its passage from one extremity of the original path to the other. It is not localised in the sense that Ziehen's and Munk's hypothetical material images are localised, irrevocably and unalterably anchored to one spot.

"Furthermore, this tract is capable of being traversed by other subsequent or preformed traces in as may different ways as the axons and ganglion-cells of the central nervous system intercommunicate, that is, so far as our knowledge extends, in a number of ways which, for all practical purposes may be regarded as infinite.

"It must always be remembered that the trace consists of a deposit of an autocatalyst which we are obviously compelled to assume is an autocatalyst for the propagation of all impulses. It follows therefore that if a faint trace runs into, that is to say traverses or intersects a well-marked trace, there will be a tendency for the impulse forming or following the faint trace to be deflected completely or in great part into the well-marked trace. Indeed if the intersecting trace be sufficiently well marked and formed subsequently to the faint trace we can see how impulses now arriving by way of the faint trace would become so largely deflected into the new, well-marked trace as to leave the parts of the faint trace remote from the point of intersection almost untraversed by any impulses at all. Instances of the mental correlates of these psycho-chem-

ical phenomena abound in our daily psychic life. For the sake of illustration, however, we may instance the ability of certain voluntary muscular efforts such as that of clenching the teeth to inhibit the otherwise involuntary motor expression of pain. In terms of our hypothesis we may translate this phenomenon as follows: The continuous stream of powerful impulses necessary to maintain the muscular effort canalises a trace sufficiently well-marked to deflect a proportion of impulses which would otherwise find their way to the traces which are conducting the impulses which condition the motor expression of pain. Another example is afforded by the fact that when the diffused activity of the central nervous system is limited and impulses are confined to restricted areas they tend to follow faint traces from which they would otherwise become deflected were the content of consciousness larger. The phenomena which accompany the formation of habits and the manner in which one habit may supplant and obliterate another afford a multitude of examples of the effects of "deep" canalisation in confining or diverting the impulses arising from our sensory impressions.

"Again it is evident, since memory traces unquestionably albeit slowly fade, that traces slowly and spontaneously tend to become fainter and fainter with disuse. The autocatalyst evidently tends to dissappear (diffuse?) from the region in which it has been deposited. From what has been said above it appears, therefore, that two regions of the central nervous system might become almost entirely isolated, blocked off from one another, owing to the sheer "depth" of certain channels in each region deflecting all impulses into well-worn pathways that would otherwise strike across the intervening faintly-channelled region and establish a communication between the two regions (contents of consciousness.) We are here forcibly reminded of the now well-known phenomena of double and multiple personality and we are led to attribute the physical correlates of these phenomena to simultaneous excessive

canalisation in one or more regions of the central nervous system.

"Sidis ("The Psychology of Suggestion" New York 1911 pp. 160 et seq.) lays in instances of dual personality considerable stress upon the fact that one of the personalities usually embraces a wider content of consciousness than the other (the "primary" personality) inasmuch as the secondary personality usually contains recollections belonging to the primary personality while the primary personality does not contain recollections belonging to the secondary personality. In such a case the primary personality evidently represents the result of confinement of the area of cerebral activity to certain deeply canalised regions which are usually those which are customarily active in the "normal" psychic life of the individual in question. The secondary personality would represent the result of an overflow of impulses into regions not "normally" traversed. Transition from the primary to the secondary personality would occur whenever a stream of impulses intersects one of the (possibly very few) "channels" connecting the "normal" with the "abnormal" region. The stream of impulses would then divide itself, until diverted into some exceptionally "deep" channel in the primary region, into two parts both of which would be represented in the psychic life. On the other hand, if the secondary area becomes "deeply" channelled, it may draw off the stream of impulses completely from the primary and the condition of primary and secondary consciousness may alternate without either personality containing recollections belonging to the other. An instance of this type of dual personality is afforded by the Hanna case.

"The instability of "secondary" personalities is also readily understood; as the trace-system connected with an "abnormal" deeply canalised region grows in extent and diversity it tends more and more to encroach upon and traverse other deeply-canalised areas which may belong to the "normal" psychic life or to other "abnormal" areas; sooner or later effective connection will be

established, impulses formerly confined to the "secondary" trace-system will be deflected wholly or partially into others and the "secondary" personality loses its outline and disappears.

"Again:—Supposing that the stimuli which impinge upon the central nervous system through the agency of the senses, or, indeed, through the spontaneous diffused activity of the central nervous system itself, be by some means so limited and suppressed that for all practical purposes all impulses arriving through the senses are for some time discharged along one pathway only; there will obviously be a tendency for that pathway to become deeply canalised, while at the same time other pathways leading from the sense-organs will be becoming progressively fainter and fainter. The subsequent tendency will be, until new pathways are forcibly channelled out, for the activities of the central nervous system (field of consciousness) to become limited and narrowed to this single channel. We are at once reminded of *idées fixes*, of the insensitiveness to disturbance of one who is deeply engaged in the elucidation of some specific problem, and of the more exaggerated phenomena of sensory hallucinations, automatic and uncontrollable impulses and of the phenomena of hypnotic and post-hypnotic suggestion. We are led to inquire whether the circumstances attending the formation of these *idées fixes* correspond in any way with the theoretical conditions just outlined.

"According to Sidis, whose genius for experimental investigation has done so much to enlarge our knowledge of this difficult field, the conditions leading to hypnosis (which he defines as a condition of abnormal suggestibility) are the following:—

1. Fixation of Attention.
2. Monotony.
3. Limitation of voluntary movements.
4. Limitation of the field of consciousness.
5. Inhibition (of the diffused activity of the central nervous system.)

"The exact correspondence between the theoretical conditions which should, ex hypothesi, lead to a condition of relative automatism and the experimental conditions which are found to lead to the condition of hypnosis is patent.

"The testimony of other observers all points in the same direction, namely, that limitation of the field of consciousness, confinement of impulses to as few and as limited channels as possible, is the prime condition fostering the onset of hypnosis and the conversion of the otherwise unpredictably and multifariously active central nervous system into the mediator of more or less automatic responses to stimuli. Thus Moll states:—"Those who can by no possibility fix their attention, who suffer from continual absence of mind, can hardly be hypnotised at all. If he sufficiently concentrates his attention; if he gazes at some object with the necessary attention, then hypnosis may be produced at the first attempt, even against the wish of the persons experimented upon."

"Bernheim approaches the view which I have developed very closely in the following passage:—"We also know that subjects who have been hypnotised often may contract an increase of this ideo-reflex excitability through habit, that is to say, through the frequent repetition of the phenomena induced; the paths most frequently followed present the easiest and most rapid way of diffusing the nervous force, the impression follows these paths from preference even in the waking condition; and for this reason subjects trained and educated by former hypnotisations may manifest the same phenomena and carry out the same acts under the influence of all-powerful suggestion."

"The analogy between reflex-action and induced psychic automatism has been frequently pointed out. From what has preceded it will be clear to the reader that in terms of our working hypothesis reflexes are to be regarded as attributable to a canalisation between the sense-organ and the organ of motor response which is

so intense as to constitute complete isolation of the reflex-path in so far as any possible deflection of the impulse is concerned. Instincts we may regard, with Fabre and Loeb, as consisting in concatenated chains of reflexes, each link in the chain being evoked by the previous link and affording the stimulus which calls into activity the succeeding link. In some instances, however, in response to the repeated assault of novel environmental conditions, the canalisation at some stage in the process may not be sufficiently deep to prevent some degree of deflection of the impulses, and under these circumstances instincts, even in animals whose life appears totally automatic, may become perverted and unpredictable results may ensue.

"The various conditions of heightened suggestibility accompanying hypnotic and allied states are to be regarded as intermediate stages of canalisation lying between the excessive degree of canalisation which conditions reflex and instinctive automatisms and normal, equably balanced and diffused activity of those portions of the central nervous system which condition our voluntary acts and thoughts, i. e., our fluctuating, non-predictable reactions to environmental changes. Habits constitute yet another group of members of the doubtless infinite series of gradations stretching from diffused unpredictable activity to the rigidly constrained reflex responses of the lower animals or of our involuntary neuro-muscular apparatus.

"I have already dwelt upon the fact that the canalisation-hypothesis permits us to account for the physical correlates of double and multiple personality, because excessive canalisation in any region would tend to isolate that region from any other deeply canalised region in the central nervous system, since all impulses would tend to be drawn off and assimilated into one or other of these regions. We have now to re-examine this point because it has a strong bearing upon the "disaggregating" action of hypnosis which has been so clearly demonstrated by Sidis and his co-workers. I

quote from Sidis:

"Hypnosis, we may say, is the more or less effected disaggregation of the controlling inhibitory centers from the rest of the nervous system; along with this disaggregation there goes a dissociation of the controlling guardian consciousness from the reflex organic consciousness. *Dissociation is the secret of hypnosis, and amnesia is the ripe fruit.*

"The magnitude of this disaggregation greatly varies. If it is at its minumum the hypnosis is slight, if at its maximum the hypnosis is deep and is known as somnambulism.

"From our standpoint of hypnosis we may say that there are only two great distinct classes of hypnotic states:—

1. Incomplete dissociation of the waking, controlling consciousness.

2. Complete dissociation of the waking, controlling consciousness. Stating the same somewhat differently we may say that there are two states:—

1. Incomplete hypnosis accompanied by a greater or lesser degree of memory.

2. Complete hypnosis with no memory.

In other words hypnosis has two states:—

1. The Mnesic state.

2. The Amnesic state.

"Amnesia is the boundary line that separates two different hypnotic regions." (*Psychology of Suggestion*, pp. 70-71).

Robertson thinks that his view of bio-chemical traces disagrees with my theory of neuron disaggregation. As a matter of fact, as he himself admits, the two theories are interchangeable. Aggregations and disaggregations of systems of traces do not in any way differ from aggregations and disaggregations of neuron systems. They are convenient hypotheses for the physiological expression of normal and abnormal phenomena of mental life.

APPENDIX IV

"UNCONSCIOUS INTELLIGENCE"

BY

WILLIAM JAMES SIDIS

The subject we are to deal with here is the explanation of certain psychological facts on the basis of logical methods. Certain actions have been observed which seem to indicate intelligence, but which are supposed not to be phenomena of consciousness. In order to pass a decision on such statements (in which I must assume the facts claimed by both sides to be correct) we must get a general idea of the methods we are going to use.

The first of these methods is the method of *isomorphism.* This depends on the supposition that, *if in two hypotheses the consequences are the same, the two hypotheses may be considered as identical for all purposes of further reasoning.* In other words, there is no use in drawing arbitrary distinctions where none really exist. When we reason from a hypothesis, its consequences come into play at every step of the reasoning; and if those consequences are the same, all reasoning will be the same, and therefore no difference can really be drawn. Again, a question of decision between two theories whose consequences are and must be the same must necessarily be one where no evidence is obtainable, and is therefore a question which cannot be discussed at all. It is like the old question of the man and the monkey: "If a monkey is on a pole, constantly facing a man who walks round the pole, has the man gone round the monkey?"

We may now proceed to apply this method of isomorphism. There are two theories to explain certain psychological phenomena called the phenomena of the

subconscious. One of these is that there is a consciousness performing all the acts of intelligence which are called subconscious; the other theory states that these acts are the results of an unconscious intelligence, which consists of purely physiological processes. It appears from the latter of the two above-mentioned theories that there is no essential difference between the properties of the unconscious intelligence and those of consciousness. Certain facts from my own personal experience prove that, at least in my own case, this "unconscious intelligence" can both read and remember. In March, 1911, while walking along a street, I suddenly began thinking about Virgil's Aeneid, and my attention became fixed on the expression "alma Venus" that I then remembered having read in that poem. In that expression I thought particularly on the meaning of the first word. After a few minutes (while I was still on the same block) I began wondering *why* I thought about that expression so suddenly. Looking around, I discovered that, among the things in the field of vision that I had not noticed was an apartment house called "The Alma." I certainly had no knowledge of the process which I know must have occurred, namely, the reading of the word, the memory that it was Latin, and the memory of the particular expression in which it occurred. Since, therefore, this process had occurred, and it was not within my consciousness, it was evidently a subconscious process. Accordingly, the "unconscious intelligence" within my brain can read and remember, and furthermore, it can remember for half a year, since it had been that time since I had seen that passage from Virgil.

Again, in August, 1913, I was walking through a square in which there was a book-store. This book-store was at some distance from where I was walking, so that I could not reasonably notice what was in the show-window without looking quite hard. That night I dreamed of seeing a book with indistinct lettering on the cover. In the morning, passing the book-store at

closer range, I found in the show-window a book with exactly the same sort of cover as the dream-book. This shows that I must have seen that book the preceding afternoon, but I certainly did not notice it. I must have seen it subconsciously, and my "unconscious intelligence" remembered it at least till two o'clock in the morning, when the dream occurred. The appearance of the book in the dream shows moreover that the memory was not only of the fact of having seen the book, but that it was also of the way the book looked: even the indistinct lettering in the dream was probably due to the fact that I had passed the store from a distance.

The "unconscious intelligence" can both remember and reason, that is, it has the two properties most characteristic of consciousness. The subconscious, according to the facts agreed on by both theories, can also do all sorts of intelligent actions and adaptations. Thus, only recently, I kept repeating two stanzas of verse that could not have been composed by anything but my subconscious.

We see then that such an "unconscious intelligence" differs in no way from a normal consciousness; except that *I* only know of it through circumstantial evidence. But the same can be said of the consciousness of another person; it is only through circumstantial evidence that *I* know of it. Whether the intelligence on whose nature we are arguing be conscious or unconscious, the consequences are the same in every way, and therefore such an "unconscious intelligence" is, according to the rule of isomorphism, practically identical with a consciousness that does not need proof in the Supreme Psychological Court.

Any identity, however, is reversible. The supporters of the theory of unconsciousness can then easily reverse this identity, and say that the theory of actual consciousness in the phenomena under dispute must be identical with their own theory. However, what is this identity? Merely that, in subconsciousness, all the phenomena are present that are concomitant with consciousness. The

disputed points, such as whether these phenomena are or are not to be *called* consciousness, may be for the moment set aside as quibble, for it is a question for a dictionary-maker rather than for a scientific investigator to define the exact use of a term such as consciousness. The dispute can now only be reduced to the question whether these phenomena, the same in every way, are to be assigned to the same or to different causes. That is, are the phenomena of normal consciousness and of subconsciousness manifestations of the same or of different occurrences? To reach any conclusion here, we must refer to the assumption of the uniformity of nature which is at the basis of all inductive logic, as well as of all science.

This assumption is that effects which are in every essential way similar must be ascribed to the same cause. Without this proposition experimental science could lead to no results in the way of general laws; a Baconian collection of empty facts would be the only possible result, and all science would have to be merely descriptive. We may quote the words of Newton, who first expressed this principle in definite form in his Principia (*Liber iii, Regulae Philosophandi, Regula ii*): *"Ideoque effectuum naturalium eiusdem generis eaedem assignandae sunt causae, quatenus fieri potest. Uti respirationis in homine et in bestia; descensus lapidum in Europa et in America; lucis in igne culinari et in sole; reflexionis lucis in terra et in planetis.* (Natural effects of the same kind must be assigned to the same causes, whenever possible. Such as respiration in man and in animals; the fall of stones in Europe and in America; the light in a kitchen fire and in the sun; the reflection of light on the earth and in the planets.)

In the dispute that we are now dealing with, we have a case where two phenomena are practically alike in every essential respect, and have no points of difference sufficient to justify a difference in explanation. Accordingly, as in the case of the fall of stones in Europe and America, the phenomena of consciousness and subcon-

sciousness must be attributed to the same cause. Since it appears from what is said by the advocates of the "unconscious cerebration" theory that one of these phenomena is due to consciousness, and the other to an unconscious intelligence, it follows from the principle enunciated by Newton that their unconscious intelligence must be conscious. That is to say, the phenomena of the subconscious are due to a consciousness.

We may take up the Cartesian hypothesis of physiological processes as an explanation of subconsciousness. Here again we may apply the principle of the uniformity of nature, if the Cartesians will accede to that logical canon. The phenomena of consciousness being identical with those of subconsciousness, we must explain all mental phenomena whatever by these same processes; for the Cartesians tell us that such an explanation is possible. Therefore whoever explains the phenomena of subconsciousness by means of physiological processes must give a mechanistic explanation of all mental phenomena. Of course, if a person wishes to regard the relation of consciousness to physiological processes either as that between the whistle and the locomotive, or as that between the forest and the trees, he may perfectly well do so. However, if this mechanistic hypothesis were true, there would be no difference between the phenomena of consciousness and of subconsciousness. The physiological theory therefore proves our former conclusion, namely, that the phenomena of the subconscious are due to a consciousness, which is the same physiologically as normal consciousness.

Besides, since the phenomena of subconsciousness are of precisely the same kind as those of ordinary consciousness, we can certainly not consistently claim unconsciousness for the one and consciousness for the other. The existence of a consciousness is not disproved by the lack of direct evidence. I have no direct evidence of the consciousness of the persons with whom I speak; but yet they act precisely as if they were conscious, and I am thus led to infer that they are so. Similarly, if I

see actions in my own body which I myself have nothing to do with (at least apparently), but which are precisely those kinds of actions that are produced by consciousness, I must infer that there is one more consciousness existent in me. Calling one conscious and denying that quality to the other is introducing a difference where there is none; and to deny consciousness where there is no direct evidence is to construct a sort of solipsism. I must conclude then with the remark that such a theory as that of "unconscious intelligence" cannot logically be held.

One of the supporters of the theory of "unconscious intelligence" has advanced an argument which is supposed to be a proof of the existence of unconscious intelligence. The argument, as nearly as I can understand it, is as follows: A number of subconscious actions is observed, and seen to manifest all the properties usually found in consciousness. Similarly, in decerebrate dogs, all actions usually called intelligent are found. Here, then, are examples of unconscious actions which show every property of intelligence. They certainly have to be called intelligence, for making a difference there is a mere "pragmatic question," and there is no logical point in calling conscious action intelligent, and other exactly similar actions unintelligent. Thus, these unconscious actions being intelligent, unconscious intelligence must exist.

In the first place, let us see what the opposing theory is. The subconscious has been explained in two ways; according to one of these, the phenomena of the subconscious are manifestations of a consciousness, possessing all the attributes of intelligence and other adaptations that any consciousness possesses, while according to the other theory there is behind these phenomena an "unconscious intelligence" which has all the properties of intelligence, but which somehow or other is not conscious.

With these two opposing theories in view, we may proceed to examine the argument. The two theories

agree in stating that the phenomena of the subconscious are intelligent and have all the attributes which are usually ascribed to intelligence. The theories disagree as to whether or not the processes which produce the phenomena are conscious. Accordingly a reasoning which seeks to establish the "unconscious intelligence" theory by proving that these phenomena are intelligent is simply proving what is already agreed on; it may be in every way correct, but it is not to the point; it is an irrelevant conclusion. Furthermore, the reasoning says: We have proved that the phenomena under observation, which are unconscious, are intelligent; therefore unconscious processes may be intelligent. Expressed as a syllogism this would read: All processes in these experiments are intelligent; all processes in these experiments are unconscious; therefore some unconscious processes are intelligent. This may seem perfectly logical reasoning, and so indeed it would be if the premises were both acceptable. But let us examine the second premise. Stating that all the processes which come under observation in the experiments mentioned are unconscious is assuming precisely the point in question, so that we are merely proving what we have assumed. As far as the particular opinion of conscious action in such cases is concerned, the argument advanced contains not only an irrelevant conclusion, but a circular proof as well. The argument is guilty at least of this double fallacy.

Furthermore, the argument, if carried out to its logical conclusion, would disprove its own result; and we may take this argument as an excellent disproof of the theory that it was intended to prove. Our advocate of "unconscious intelligence" has stated that conscious processes are in no way different from subconscious processes or from actions of decerebrate dogs. Therefore, he concludes, it is a mere "pragmatic question" whether or not we should call one of these classes of actions intelligent and the other unintelligent, since there is no real difference between the two kinds of actions. Sub-

stitute all through the argument the term "conscious" for the term "intelligent." It is, then, a mere "pragmatic question" whether or not we are to call one of these classes conscious and the other unconscious, since there is no real difference between the two kinds of actions. If the argument about intelligence is valid, the argument about consciousness must also hold. Accordingly, pushing this argument to its logical conclusion, we deduce that not only the class of actions called subconscious, but also the actions of decerebrate dogs, are conscious actions. We cannot say that either the subconscious processes or decerebrate dogs are unconscious, according to the logical outcome of the argument advanced by the supporter of "unconscious intelligence"; on the contrary, we must deduce that there is a consciousness causing all subconscious actions, and that the consciousness of dogs does not depend on the presence of the cortex. The first of these conclusions from the argument we have taken up is the only one that is important for our purposes: *subconscious processes are conscious.*

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